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LAKE CARRIERS' ASSOCIATION.

To consider and take action upon all general questions relating to the navigation and carrying business of the Great Lakes, maintain necessary shipping offices and in general to protect the common interest of Lake Carriers, and improve the character of the service rendered to the public.

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TRACKS OF STORMS.

Accompanying the Atlantic pilot chart for August as a supplement is a series of graphic delineations showing the track of storms in the United States during the months of August, September and October for the period of six years, 1888 to 1893, inclusive, compiled from the records of the U. S. Hydrographic Office and the U. S. Weather Bureau.

Relative to the hurricanes which have their source in the West Indies or Gulf of Mexico, the Hydrographer states that so much has been written about the dreadful ravages of the West Indian hurricanes that they have come to be regarded by some as the only class of

storms which prevail during the above named months. Although they are usually violent when they occur, yet facts show that the storms which travel eastward into the ocean from across the continent are more frequent and require seamen to be equally vigilant to manoeuvre their vessels properly. A study of the general conditions indicates that during August and September the land storms usually enter the Atlantic across Newfoundland and Labrador, while in October the storms from over the land reach the Atlantic coast and enter the Atlantic all along from Cape Hatteras to Newfoundland. The tracks of many of the tropical storms are quite irregular, and, instead of following curves of regular shape, they sometimes are deflected abruptly or prevented from curving until the higher latitudes are reached.

The only tropical hurricane which approached the lakes in these months during the six years was the storm of October, 1893, which swept through the center of Lake Ontario in a direction a little to the east of north. A number of well defined storms having their origin west of the lakes and sweeping across the continent to the seaboard are traced on the map, with, as might have been expected, the largest number traversing the entire length of Lake Superior, the lower lakes escaping from many of the hardest blows. It is noticeable that the paths of these storms seem to have cleared Lake Michigan better than on any of the other lakes excepting Superior.

A SUBMARINE TELEPHONE.

The success that has attended the recent attempts in England to establish a practical system of telephonic communications without wires between ships at a distance from each other, serves to recall the fact that about two years ago an American inventor, Dr. Ernst Huber, secured the assistance of the United States government in the projection of a series of experiments in deep sea telephoning. For some reason the experiments were not made, but the device promised well. The sound waves passing through the water caused metal strips to vibrate, and the vibrations were transmitted by wires to microphones, which greatly intensified them. An indicator showed the intensity of the sound, and gave an idea of the distance of the object causing them. The direction whence the sound came could also be determined. The sounds within the ship were eliminated, and only extraneous noises were recorded. Sound waves could be thrown out in all directions by the ringing of an electric bell, and being reflected indicated icebergs, submerged wrecks or other obstructions even ten miles away.

DETECTING FLAWS IN IRON OR STEEL.

A modification of the flaw detector brought out some time ago has been designed by a Paris inventor. The apparatus is electrical, and consists of a small pneumatic tapper, worked by hand, with which the sample of steel or iron is tapped over. With the tapper is connected a telephone, with a microphone interposed in the circuit. For the operation of the apparatus two persons are required, one to apply the tapper, and the other to listen through the telephone for the indicating sounds. Although the operators are in electrical connection, they are located in separate apartments, so that the direct sounds of the taps do not interfere with the listener. While the sounds produced by the taps are normal, the operator at the telephone does nothing, but directly a false sound, which is distinguishable from the normal sound, is heard, he sends a signal for the spot to be marked, and thus not only detects but locates the flaw.

ELECTRICAL STEERING.

The S. S. Friesland, of the Red Star Line, has made a successful round voyage and given a good test of the new electrical telemotor for operating the steering engine. The steering wheel is located on the bridge whilst the steering engine is located aft at the rudder. The operation of steering is the same as ordinarily, that is with a small steering wheel, making about eight revolutions from port to starboard. The connections between the bridge and the gear aft is an electric cable which contains the wires for the manipulation. The wheel on the bridge can be put at any point desired and valve of the steering engine will be operated and the rudder in turn will place the helm at the rudder at the corresponding point that the steering wheel has placed the indicator on the column on the bridge.

The wheel can be put hard a port and the rudder will be moved accordingly. The wheel can be brought back to any point desired and the rudder will show the corresponding angle; in other words wherever the quartermaster turns the wheel, the rudder will have the corresponding angle. This machine performs all the functions of a steering engine and can be used for handling the rudder direct, without the steam engine if desired; it only being a question of the size required to do the work.

On board the steamer Friesland, as on other large ocean steamers where the engine is placed in the stern of the vessel, the electric telemotor is used to take the place of shafting, which on account of the great length required to run to the pilot house is found very objectionable, not only for trouble of erecting, but also that it is found hard to handle, whilst with the electric telemotor, the power required is so little that a child could handle it with ease.

The electric telemotor and steering gear is the invention of J. D. Williamson, Jr., and is constructed by Williamson Bros., of Philadelphia, who, as our readers are aware, have a large experience in the construction of steering engines.

THE UNITED STATES LUMBER INDUSTRY.

An interesting statement lately issued by the United States Department of State collates reports lately gathered by United States consuls throughout the world in reference to American lumber in foreign markets. These reports disclose the fact that the United States sends lumber to every country on the globe, and that, while in many lands the market is virtually controlled by the shippers of that country, there are still great possibilities of increased sales. It appears that nearly all the building lumber imported by Africa comes from the United States; that Japan buys it, and that no other lumber enters South American ports. Hawaii, by letting American lumber in free of duty and charging 10 per cent. ad valorem duty on Canadian lumber, virtually prohibits the importation of the latter. Consul Mills, at Honolulu, reports that all the timber used there comes from the United States and that it amounts to 15,000,000 feet annually. Even the island of New Caledonia prefers pine from Washington. All the lumber used in Madeira comes from Maine, North Carolina and Nova Scotia; while Mexico and the West Indies rely wholly upon the United States. Austria buys \$1,000,000 worth every year and would take as much more if it could be bought readily. The main difficulty seems to be in procuring the transport of the American wood, little being carried by American ships. The principal rivals of the United States in the world's lumber trade are Canada and Norway, except in England, where Russia and Germany are competitors, and in Austria, which is supplied by countries on the Mediterranean.

NEWS AROUND THE LAKES.

CHICAGO, ILL.

Special Correspondence to The Marine Record.

The schooner Colonel Ellsworth was sold by William T. Farwell, Chicago, to Mrs. Frances A. Baker, Detroit, for \$2,500.

The Dunham Towing & Wrecking Co. have not yet succeeded in locating the tug Wm. R. Crowell, sunk off Michigan City.

Shippers offered grain freights Monday at $\frac{3}{4}$ of a cent per bushel to Buffalo but could not find vessel owners willing to take such a low rate.

Capt. Dave Cochran has, I am pleased to mention, recovered from his attack of sickness which caused great anxiety to his family and friends last week.

A Buffalo captain is anxious to know if the wreck of the schooner David Vance which sank off Point au Pelee has been raised, and if not, the depth of water she is lying in.

The schooner yacht Idler arrived here last Thursday from a cruise. She left Manitowoc at 4:30 a. m. Thursday and arrived here at 6:30 p. m. the same day, making the run at the rate of between 12 and 13 miles per hour.

At Miller Brothers' shipyard the schooner Ellen Williams was in dock for some calking, the tug Luther Loomis for re-calking and re-ironing, the steam lighter Albert Wallace secured a new rudder, the schooner A. P. Grover a new jibboom.

Capt. Wood, who recently commanded the steamer Robert Holland has been awarded by a final court decision at Denver, Colorado, the sum of nearly \$800,000 and a third share in the Emma silver mine, which is one of the best paying mines in California.

The fire in the lumber district last week made a complete clean out of S. K. Martin's extensive lumber yards, entailing upon him a loss of about six hundred thousand dollars. The John Spry Lumber Co. also had about \$150,000 worth of lumber destroyed, Edward E. Ayer Tie & Block Co. about \$20,000, the Edward Hines Lumber Co. about \$5,000, Perley Wood & Co. about \$145,000.

The Lincoln Park Club yacht race last Saturday afternoon was not a great success. The schooner yachts Crusader and Toxteth started in the schooner race, the Crusader finished the race but the Toxteth was so far behind that she went to her anchorage in the inner harbor instead of completing the race. The sloop yacht Phantom of the first-class sloops had to sail the course alone, as the Valiant did not turn up to compete with her. The new sloop yacht Arrow had an easy task in beating the sloop yacht Viking, which has won many prizes in the past.

WILLIAMS.

CLEVELAND, O.

Special Correspondence to The Marine Record.

Several of the Corrigan Line fleet have been laid up here awaiting better freights. They are now fitting out again.

The \$1,000 fine imposed on the steamer Norman for not carrying a boat in the davits when on the lake has been remitted.

The first race of the Inter-Lake Yachting Association, held at Put-in-Bay on Tuesday, was declared off on account of a lack of wind.

The Bradley Line steamer Alva caught fire while at the dock in Ashland, on Wednesday. The damage is now estimated at about \$1,500.

It is a pleasure to learn that Capt. Thos. Wilson, after being "under the weather" for several days past, is again to the fore, hearty and positive, as usual.

Among the prominent vessel men visiting this port during the week were Capt. E. M. Peck and A. A. Parker, of Detroit, also Capt. David Vance, of Milwaukee.

The excursion business out of this port is simply booming, and the Put-in-Bay line of the D. & C. Co., as well as the C. & B. Line, have all the patronage that they can attend to.

The Mutual Line steamer Corona was docked this week in the Ship Owners' Dry Dock and cleared on Wednesday afternoon for Escanaba. The German docks tomorrow for a new wheel.

R. Van Slyke, of Detroit, will succeed Farasey & Marron as agent of Grummond's Mackinac line of steamers, and the business will now be conducted at the warehouse and dock, No. 3 River street.

Mr. U. Grant Grummond was in the city this week, introducing Mr. Van Slyke, the new agent of the Grummond boats, to Cleveland people, and completing the details of the lease of the dock at No. 3 River street.

The odor from the river has become something dreadful, and when the water is stirred up by passing steamers, it is almost impossible to live within a block of it. The water has been falling of late, but the mud gives it an odor as a mathematician would say stronger in the inverse ratio.

A special meeting of the Ship Masters Association was held this week, Capt. C. E. Benham presiding, to take appropriate action on the death of Capt. Smith Moore. Capts. J. B. Hall, Edward Morton and George P. McKay were appointed a committee to draft resolutions, and the charter of the lodge was ordered draped in mourning.

The phenomenal success of the Cleveland & Buffalo Line of steamers is the wonder of the port and now a new boat is talked of that will be speedier than anything on the lakes, perhaps omitting the Northwest. Great credit is due Manager Newman for working up such an excellent lake trade in freight and passengers between here and the Queen City.

The Chase Machine Co. is one of the busy machine shops at this time, and I note that they are building new machines to be shipped to New York, Buffalo and Shire Oaks, Pa. The marine repair work is also brisk, besides patent automatic fog whistle machines have just been fitted on the Kearsarge and the new steamer completed by the Cleveland Ship Building Co.

Repairs on the old river blast furnace, which has been idle for more than a year, are about completed, and the furnace will be lighted in a few days. A supply of coke is on the way and Corrigan, Ives & Co., who will run the plant, have a large supply of ore on dock at the furnace. The dock has been put in good shape and new ore hoists have been erected. The dock capacity is about 200,000 tons. Quite a number of boats have unloaded there during the past few weeks.

The much-needed repairs to the river docks at the foot of Front street are being made, and a fine wharf is the result. The carpenters as soon as they finish at that place, will go to the foot of St. Clair street, and will build a new dock there. The dock lines at present encroach on the river for a distance of seven feet, the full width of St. Clair street, and in putting in the new dock this will be remedied. The property between St. Clair street and the Cleveland & Buffalo dock extends eleven feet too far into the river at a very narrow place, and this will be cut off at the same time. The Detroit & Cleveland and Cleveland & Buffalo docks are built exactly to the line.

At the yards of the Globe Iron Works Co. employment is given to a large number of their skilled workmen, yet when extra work comes in the staff is taken from the ship yard to advance immediate orders. This week the Mutual Line steamer Corsica came in with a broken crank-pin and after replacing same, besides giving her engines a general overhauling, she will clear again on Friday night. The Northern Line steamer Northland, as well as the freight steamer which I have previously named the John F. Pankhurst are steadily being worked on, though for some reason, unknown at the shipyard, there seems no desire to hurry the completion of either craft. The cause, however, is palpable, the Northwest fills the present passenger traffic, and freights are too measly poor to put the big cargo boat in commission.

The composite built steamer E. M. Peck will come out of the Cleveland Dry Dock Thursday afternoon, that is, if Capt. Frank Wright, Superintendent of the Dry Dock, can possibly advance the work to the hour he has specified. Repairs on the Peck would argue that composite built craft are not as easily handled as they are on all metal or wooden boats. The damage looked slight when the vessel docked last week. A survey was held by Capt. McLeod and Robert Logan for the Underwriters, with Mr. Oldham representing the owners, and it is safe to say that if the Peck had been either of wood or iron she would have been out of dock at least forty-eight hours earlier. The repairs on the Peck consisted of a new forefoot, a piece of new keel, about thirty feet of garboard, three planks, averaging forty feet in length, in her bottom forward, on the port side, repairs to bilge on the starboard side, and three new frames to replace broken ones at the same place, also a steel plate taken off and re-rolled.

DETROIT, MICH.

Special Correspondence to The Marine Record.

A fall of three inches was noticed in the river level on Tuesday.

An attempt will be made to raise the sunken schooner Glad Tidings, if on examination by a diver she is found worth the expense.

The steambarge Leland was libeled this week for a tow bill, while passing down the river, she was bonded and released from the marshall's hands.

That freights are picking up again is easily seen by the number of boats passing this point. The river has been more crowded with vessels this week than for quite a while past.

A special from Washington on Thursday gives the appointment by the President of John H. Galway as supervising inspector of steam vessels for this district to succeed Capt. Westcott. Mr. Galway is a marine en-

gineer and was national president of the M. E. B. A. for one term.

The new Port Huron tug, Boynton, has been fitted out here with her machinery, and left on Wednesday for her home port. The Detroit Dry Dock Engine Works built her boiler and the Riverside Iron Works, Samuel F. Hodge & Co., the engines. The Boynton is one of the best tugs on the river.

McElroy's steamer Unique was towed to Port Huron on Tuesday to receive her Ward water tube boilers, and the prospects are that she will be in commission on about September 1. It is reported that the Unique's route is to be extended to Toledo. She will leave Port Huron in the morning, making one round trip every day, a run of 240 miles.

The men aboard the small schooner Emma, charged with robbing a bumboatman on the high seas, which, however, was on the river, and who are now under arrest at Port Huron, will be proceeded against by the United States authorities on the charge of piracy. Under the interpretation of the law handed down from the Supreme Court in the famous Alaska case, the lakes are decided to be high seas, and action on the charge of piracy can be instituted in the case of the Emma. The penalty under the United States statutes for piracy is hanging. The Canadian authorities have made an application for the extradition of the crew of the Emma, but it is reported that extradition will be refused, although the offense was committed in Canadian waters.

BAY CITY, MICH.

Special Correspondence to The Marine Record.

The owners of two or three of the smaller steam yachts have been compelled to lay up their craft because they had not complied with the inspection rules. They claim that spite work is at the bottom of their trouble, and that certain tug owners have reported them because the tugs did not get the jobs of filling and cleaning boilers. The yachtmen claim that several tugs are being run with unlicensed officers, and propose to get even with their persecutors by reporting them.

Sinclair Stuart, surveyor for the United States Standard Steamship Owners, Builders and Underwriters' Association, and the United States Lloyds, has been in Bay City classing the two new steamships built by James Davidson. He pronounced them the finest steamships on the lakes in every particular, and gave them an A1* rating. Mr. Stuart, who is superintending the building of the new passenger steamship North Land, sister ship to the North West, says she will be ready for launching in about six weeks.

The McKinnon Manufacturing Co., boiler makers, founders and machinists, Bay City, Mich., are having an excellent marine patronage. They have recently finished work on the following tugs, Robt. Earnest, calked; C. W. Wells and J. V. O'Brien in the slings for repairs to stern bearings; B. W. Aldrich, Geo. N. Parker, and Grant for new propeller wheels; the A. A. McLean for new shaft, the steambarge Maine for new wheel also fitted a wheel on the new steamer Minnie E. Kelton.

MILWAUKEE, WIS.

Special Correspondence to The Marine Record.

One of the results of the increased taxation of vessel properties in Milwaukee, it is announced, will be that within 30 days or so over \$3,000,000 worth of vessel property will be transferred to cities in other states. The tax levy on Milwaukee vessel property has always been considered excessive by Milwaukee ship owners, and when the board of review this spring doubled the amount of assessment, a committee of the vessel owners called upon Tax Commissioner Brown to protest, but received no satisfaction. Individual owners also called on Mr. Brown, but fared the same as the committee. The Milwaukee fleet, besides a number of smaller crafts, numbers 25 large carriers. The majority of them will be transferred to stockholders living in Pennsylvania, with Erie as the hailing port, and the others to New York, with Buffalo as the port of hail. In Pennsylvania no assessment is made on vessel property, while in New York the tax is just nominal. According to one of the most prominent vesselmen in the city, the laws of Wisconsin were patterned after the laws of New York, while in New York vesselmen paid a fair rate, they were being mulcted in Milwaukee, they assert. As an instance, it was stated that where Milwaukee owners pay \$800, New York vesselmen pay \$50. Milwaukee is the only city in Wisconsin, it is claimed, where vesselmen are taxed excessively. In Sheboygan, Racine, Kenosha, Manitowoc, Kewaunee and Green Bay the assessment, it is claimed, is but from 5 to 12 per cent of what it is in Milwaukee. The Milwaukee assessment was always viewed as excessive, but this year the assessor exactly doubled the amount. The excessive assessment is one of the reasons given why Milwaukee is not favored as a port of hail and it is said to be this policy that is forcing all the vessels away from Cleveland. By the transfer of the property to other states, Milwaukee will lose a large sum of money in the aggregate in taxes every year.

BUFFALO, N. Y.

It is not yet clearly understood at all lake ports that the former firm of Galvin, Clark & Boland, vessel owners, agents, and brokers, was dissolved on June 9, and the firm of Galvin, Clark & Co. organized on the same day. The firm now consists of Capts. M. J. Galvin, Alex. Clark, and John C. Fitzpatrick, the latter gentleman succeeding Mr. Boland.

The *Enquirer* notes this week that cross signalling is becoming a too frequent habit among the captains of the excursion craft in the harbor and river. For instance as the Puritan was about to land at Ferry street on her way down the river the Idlehour let go her lines at the same time and swung out into the stream. Capt. Gilbert waited for Capt. Golden of the Idlehour to take his choice as to which side he'd pass and when the latter signalled that he'd go to port Capt. Gilbert answered him accepting the situation, whereupon the Idlehour's whistle sounded again changing the first choice and declaring that Capt. Golden intended to pass to starboard. This compelled the Puritan to back away in the strong current and made it a hard task to fetch her dock while waiting for the Idlehour to get out of the way.

Capt. J. Killoran, marine superintendent of the Northern Steamship Co. at this port, has returned from a trip on the steamship North West to Duluth.

A survey was held on the Adelia Shores this week, at Tonawanda. Capt. Robinson and Mr. Parsons were the surveyors. Capt. Calbick, of the firm of Palmer, Cook & Calbick, looked after the interests of the Shores Lumber Co., to which the vessel belongs.

Coal shipments for the past week fell to 51,675 tons, which is about the smallest amount of any of any week since the season opened. There has been a scarcity of tonnage, but if the promise of better grain receipts is realized, there will soon be enough and too many carriers. At the present demand for soft-coal not much tonnage will come here from Ohio.

At the New York meeting of the lake and rail line managers the expected happened in regard to the attempt to come to an agreement over the division of east-bound package freights carried by the lake lines. Meeting after meeting has been held, but nothing has come of them and the Buffalo representatives of the lines went to New York again this week to attend the adjourning meeting that was expected to settle the matter. There is no detailed report of the meeting, but the word is that it broke up in a general row and that is enough to know. Rates which have been held up very well for some time in hopes of an agreement, will go to pieces at once and there will be a general scramble for business on the guerilla plan for a while.

There is a Salvation Navy as well as a Salvation Army. One of the vessels of the Salvation fleet, the steamer William Roth, is at present cruising about, visiting the towns and cities on Lake Erie. She carries a crew of picked Salvationists, each of whom is a musician. This vessel with her crew reached Buffalo harbor this week, under the command of Staff Capt. Jewer. After this the deluge!

The grain shovelers kicked against a foreman at the elevators here this week and will not in future allow the boss to take in a share of their hard earnings.

Buffalo people are not yet reconciled to the noise of the fog horn, but if they would only remember the value it is to seamen making the port in thick weather their objections would be silenced.

A LAKE ONTARIO COLLISION.

CLAYTON, N. Y.—The published account of the run-down of the steamer Alert by the Islander is so far from the truth that something must be said in denial. At the investigation, which was adjourned to Tuesday next, witnesses testified that the Alert was abreast of Washington Island when the Islander left the railroad wharf; that the Islander overhauled the Alert some twelve rods from the Round Island wharf; that the Islander first blew the whistle for the wharf; that the Alert also signalled for the wharf in the same manner; that no passing signals were exchanged; that the Islander as well as the Alert were in full headway; that the Alert was heading for the lower angle of the wharf, and did not change her course until pushed out of it by the Islander; that the Alert was hit on the starboard quarter at a distance of about four rods from the wharf and was pushed up against it by the Islander; that the Islander swung out of her course, and at the time of the crash the water was spouting up her stem, and that she did not back out of the wreck until the Alert was pushed around below a right angle with the face of the wharf; that the Islander's stem cut into the Alert up to the keel, forward of the boiler; that there was room between the face of the uppermost end of the wharf and the course of the Alert for the Islander to effect a safe landing had she been under check.

Those who saw the accident a moment after it occurred discovered the Alert lying helplessly across the bow of

the larger boat, whither she had been pushed around by the force of the larger applied near the stern. These late eye witnesses naturally concluded that the smaller boat was caught in the act of crossing the Islander's bows, but such was not the case. The Islander was too far ahead to clear the Alert in her (Islander's) attempt to pass to port of the Alert. The marks of the first contact can be seen about five feet forward on the stern of the Alert, thence the big boat crept grinding along her side until the dock was reached, when the result of an "irresistible force coming in contact with an immovable body" inevitably followed. The Islander had the whole river from Clayton to Round Island to pass to port astern. Rule VIII requires a boat astern desiring to pass to signify the intention by prescribed blasts of the whistle. No such signal was given. Facts are what the people want and no good will come of suppressing the truth. As to purpose and intention of either of the captains, no proof can be given. The lives of seven people were in jeopardy and nothing but the interposition of providence evaded a fatality.

HENRY S. JOHNSTON.

SUPERVISING INSPECTORS APPOINTED.

The President nominated on Wednesday the three supervising steamboat inspectors for the lake districts. John H. Galway, of Detroit, will succeed Capt. Westcott. The ninth district, with headquarters in Buffalo, will be under the supervision of Capt. J. M. Galvin, who has been an owner and master of steam vessels on the lakes for a great many years, and George Winans, of Detroit, gets the place in the fifth district in spite of strenuous opposition.

THE CANADIAN "SOO" CANAL.

Now that the Sault canal is nearing completion, the question will have to be determined by the Dominion government before long as to whether or not the canal shall be free. The general impression is that the Canadian government, from the fact that the Michigan canal is free, will have to adopt a similar policy with regard to the one on the Canadian side of the St. Mary's river. The lock proper at the Sault is entirely completed, the only thing delaying the opening of the canal being the machinery for the gates and valves, which is being manufactured at the Kingston locomotive works.

AMPLITUDES.

The following approximate amplitudes of the Sun's rising will be given each week in this column during the season of navigation: A second bearing of the Sun may be taken at sunset by reversing the bearings to read west instead of east, as, for example, N. E. by E. for a sunrise bearing would read N. W. by W. for a sunset, or E. 30° N. to W. 30° N.

LAKE ERIE AND S. END LAKE MICHIGAN LAT. 42° N.

Sunrise.	Bearing (degrees.)	Bearing (points.)
Aug. 11.....	E. 21° N.	E. by N. 7/8 N.
Aug. 17.....	E. 18° N.	E. by N. 5/8 N.

LAKE ONTARIO, S. END HURON AND CENTER LAKE MICHIGAN LAT. 44° N.

Sunrise.	Bearing (degrees.)	Bearing (points.)
Aug. 11.....	E. 22° N.	E. by N. 7/8 N.
Aug. 17.....	E. 19° N.	E. by N. 5/8 N.

N. END LAKES HURON AND MICHIGAN, LAT. 46° N.

Sunrise.	Bearing (degrees.)	Bearing (points.)
Aug. 11.....	E. 23° N.	E. N. E.
Aug. 17.....	E. 19° N.	E. by N. 3/4 N.

LAKE SUPERIOR LAT. 48° N.

Sunrise.	Bearing (degrees.)	Bearing (points.)
Aug. 11.....	E. 23° N.	NE. by E. 7/8 E.
Aug. 17.....	E. 20° N.	E. by N. 3/4 N.

With a compass correct magnetic, the difference between the observed and true bearings will be the variation for the locality. If there is any deviation on the course the vessel is heading at the time of taking the bearing the result after the variation is applied will be the amount of deviation on that course.

LAKE LINE RATES.

The threatened war between the steamer lines has broken out this week without anyone waiting for the final meeting of the lake line managers with the trunk lines at New York. As yet the war has not extended to open tariff announcing reductions, but deep cuts in east bound rates on flour and general merchandise are reported to have been made. It is believed that in case the meeting does not agree upon a division of traffic by percentage between the various lines, that the war will become general from both Lake Michigan and Lake Superior by the end of the week. There is little hope among the steamer people that an agreement can be reached, owing to the inability of the lines to agree upon percentages. The effects of the war will be as disastrous to all-rail traffic east as to the lake lines.

ITEMS FROM THE LOG BOOK.

Sealed bids for the wreck of the raised steamer Waldo A. Avery, now lying at Duncan City, Mich., will be received by C. A. McDonald & Co., of Chicago, the underwriters owning the wreck, up to August 10.

Ashland ore shipments for the week ending August 6 were 74,299 tons and of lumber 4,825,000 feet. Shipments for the month of July were: ore, 205,286 tons; lumber, 23,755,000 feet. For the season up to the end of July there had been 766,543 tons of ore shipped and 9,600 tons of coal received at that port.

The schooner Col. Ellsworth was sold on Monday by William T. Farwell to Mrs. Frances A. Baker, of Detroit, for \$2,500. The Ellsworth was built in 1861 and rebuilt in 1872 and measures 202 tons. Two years ago she was rated as worth \$6,000. The price she brought shows a remarkable depreciation in vessel property.

Capt. Adolph Freitsch, the hardy Norseman from the Great Lakes, who proposes to cross the Atlantic in his 40-foot boat Nina, sailed from New York on Sunday morning on his venturesome journey. The Nina would have sailed long before this had not the captain been hampered for means to buy the instruments and supplies required for the trip. He expects that the passage will take thirty-five days.

The Sault Ste. Marie *News* states, on the authority of General Manager Gordon, of the Northern Steamship Co., that the salary of Capt. Campau, of the steamship North West, is \$2,700 a year. This was in reply to an article on salaries published in a Detroit paper, which intimated that Capt. Campau was receiving only about \$1,500 a year for his services. The same article stated that the salaries of the masters of the Northern Line steamers had been \$1,000, but surmised that they had been heavily cut this year. Mr. Gordon states that they have not been cut.

The schooner A. J. Rogers, laden with steel billets from South Chicago for Cleveland, went ashore six miles South of Cross Village on Tuesday morning. A heavy smoke on the lake from forest fires was said to be the cause of the stranding. The Rogers has had hard luck since she went to South Chicago for her cargo. She came near sinking at the dock there but was repaired. She put into Grand Haven in a sinking condition. Temporary repairs were made and she started out again, only to go ashore. The Rogers is owned by W. H. Hargrave, of Detroit.

Muskegon harbor was entered a few mornings ago by a British torpedo boat. The stars and stripes waved proudly from the mainmast and over her bulwarks glittered in gold letters the word "Aeolus," the name of the boat. She was manned by Capt. O. E. Hogobaum, of Chicago and a crew of four. The Aeolus is on a pleasure tour from Chicago to the straits and is rigged up as a handsome pleasure yacht. She was built at Glasgow, Scotland, eight years ago by the British government as a torpedo vessel. Her hull is covered with half-inch steel armor, she is 30 feet long with 12-foot beam and draws four and one-half feet of water. It was found after she was built that it required too much force to propel her through the water. Useless as a torpedo boat she was offered for sale and was purchased by C. L. Wexmuth, of Chicago, for \$7,000, which is \$15,000 less than it cost to build her.

The schooner Cactus arrived at Boston on Sunday from Baltimore, coal laden. The master reported that on July 22d, when off Cape Henry, he picked up a man from the water who gave the name of George Moore and stated that he had been a stoway on the Johnston Line steamer, Templemore, from Liverpool to Baltimore. When the steamer neared Cape Henry, Moore, who is a native of Bristol, Eng., secured a life preserver and jumped overboard, hoping to swim ashore. The currents swept him seaward, however and he had been in the water 14 hours, when picked up by the schooner.

The wooden steamer Roanoke, burned off Keweenaw Point, Lake Superior, on Tuesday night and was abandoned by her crew after all efforts to save the vessel were given up. The crew were picked up by the steamer Spencer. The Roanoke was built in Cleveland in 1867, and belonged to the type of construction of that time. She was rebuilt in 1890 and was owned by William F. Bottsford, Charles D. Thompson and others of Port Huron. She was 956 tons, rated A2 and valued at \$50,000 by the Inland Lloyd's Register. \$44,000, of which \$13,000 was taken by C. A. Macdonald & Co., of Chicago. The rest was distributed between several agencies.

ASSISTANT LIGHTKEEPER AT THE "SOO."

The Secretary of the Treasury has appointed Sidney A. Knox, assistant keeper of the light station at St. Mary's Falls canal.

THE Providence yacht capstans built by the American Ship Windlass Co., Providence, R. I., are coming to the fore in this country, the Earl of Dunraven having just ordered one for his Audrey. The Vigilant has one of the Providence bar capstan windlasses.—*Glasgow Evening Citizen*.

MARITIME LAW.

EVANS et al. v. THE STARBUCK.

District Court, E. D. Pennsylvania. May 4, 1894.

ADMIRALTY JURISDICTION—DREDGE AND SCOWS. A dredge and her scows are to be treated as one concern, and are subject to libel in admiralty for wages.

BAKER et al. v. THE BIG JIM.

District Court, E. D. Pennsylvania. May 4, 1894.

ADMIRALTY JURISDICTION—MARINE PUMP. A marine pump, which was weighted with heavy ballast, so as to rest on piles, but capable of floating and being towed from place to place, and which is used for sucking mud from beneath the water or from scows alongside, and forcing it by steam power onto the adjacent land, is not a subject of admiralty jurisdiction.

HIGGINS et al. v. THE ALLIANCA.

District Court, S. D. New York. May 15, 1894.

1. MARITIME LIENS—PREMIUMS OF INSURANCE—DOMESTIC VESSEL—STATE LAW—DEBT CONTRACTED ABROAD—SPECIFICATIONS—SUBROGATION. Libelants, as brokers acting for a domestic steamship company, procured insurance on the vessels of the company in England, T. & Co., their English correspondents, obtaining the policies from underwriters there. According to the established usage in England, T. & Co. paid the premiums and charged them against the libelants, but they filed no specifications of lien here. Libelants denied any legal liability to T. & Co., but afterwards reimbursed T. & Co., and, themselves filing specifications, brought these suits against the vessels of the company to recover the money advanced. The law of New York State gives a lien for certain debts "contracted within this State." Held, That, T. & Co. having no lien, both because the debt was contracted in England and because they had filed no specifications, libelants could acquire none from them by subrogation.

2. SAME—ADVANCES—REPAYMENT OF DEBT NOT ACCOMPANIED BY LIEN—CREATION OF NEW LIEN. The law of New York State gives a lien "for advances made for the purpose of procuring necessities for a ship or for the insurance thereof." Held, That, to create a lien, the advances must be made for the purpose of obtaining the insurance, or paying off those who have a lien therefor; and where they are made merely for the purpose of paying an old debt, not accompanied by any lien, no lien is created in favor of the person making such advances.

Brown, District Judge.

The above libel, and three others of similar purport, were filed for the purpose of enforcing alleged liens, under the law of this State, for moneys advanced by the libelants for the payment of certain premiums upon policies of insurance procured in England by the libelants, as brokers, through Tyson & Co., their English correspondents, in behalf of the United States & Brazil Mail Steamship Co., upon their steamers Seguranca, Vigilancia, Allianca and Advance. The policies ran for one year each, and were taken out in England at various dates from March to November, 1892, by Tyson & Co., who were insurance agents at Liverpool and London. By the established usage of business in England, the underwriters there look alone to the local agent or broker who procures the insurance for the payment of the premiums. The debt for premiums is owed to the insurer by the broker alone. Tyson & Co., in pursuance of this usage, paid to the underwriters the premiums on each policy shortly after it was issued, and the policies were forwarded to the libelants.

The State act provides, in section 1, that "whenever a debt amounting to \$50 or upwards shall be contracted by the master, owner, builder, etc., of any ship or vessel, or the agent of either of them within this state * * * (subdivision 4) on account of loading or unloading, or for advances made for the purpose of procuring necessities for such ship or vessel, or for the insurance thereof, * * * such debt shall be a lien upon such vessel," etc. Subdivision 5 of section 1 gives a lien "whenever a debt amounting to \$25 or upwards shall be contracted as aforesaid, within this state, on account of the towing or piloting such vessel, or on account of the insurance or premiums of insurance of or on such vessel or her freight." Section 2, as amended by the Laws of 1886, c. 88, provides that "such debts shall cease to be a lien at the expiration of twelve months after said debt was contracted, unless at the time when said twelve months shall expire such ship or vessel shall be absent from the port at which said debt was contracted; in which case, said lien shall continue until the expiration of thirty days after such ship or vessel shall next return to said port; and in all cases such debts shall cease to be a lien upon such ship or vessel unless the person having such lien shall within thirty days after said debt is contracted cause to be drawn up and filed specifications of such lien," etc. By the express language of this statute, it applies only to debts "contracted within this State." The obligation of the steamship company, therefore, to Tyson & Co., in England, for the premiums of insurance paid by them, constituted no lien upon these vessels, both because no specifications were filed by them, and because the debt to Tyson & Co. for such premiums was contracted in England, where the policies were taken out, and where the payment of premiums was made. Tyson & Co., therefore, having no

lien, the libelants could acquire none from them by subrogation.

The libelants claim a lien, however, under the fourth subdivision of the first section of the act, which gives a lien "for advances made for the purpose of procuring necessities for such ship or vessel, or for the insurance thereof." This provision must be construed in harmony with the evident meaning of the context, and with the general purpose of the act. The act is drawn in language familiar to the maritime law, and its phases must be interpreted according to maritime usage. The intent of the act evidently is to supplement the maritime law of this country by providing for certain liens upon domestic ships in cases in which our maritime law does not recognize any lien, except upon statutory provision; and to allow a lien also for the building and insurance of vessels, for which a maritime lien is given by the law of most maritime countries, but not by ours. The act provides, in accordance with the policy of the maritime law, against any long continuance of secret liens, by requiring a public registration of the claim in all cases within thirty days after the debt was contracted. The presumed necessities and conveniences of commerce are the foundation of all maritime liens, and the state act recognizes the same need for domestic ships as for foreign ones. Advances of money in order to obtain necessities are placed by the maritime law on the same footing as the necessities themselves; if they are made for the purpose of obtaining the necessities, or of paying those who have a lien therefor, they enjoy the same privilege. *Thomas v. Osborn*, 19 How. 29; *The J. B. Williams*, 42 Fed. 533. Subdivision 4, above quoted, adopts the same rule, and should be subject to the same construction. It does not apply to advances which are neither made for the purpose of obtaining necessities or insurance, nor are the means of discharging an existing lien for either, but are simply the means of repaying an old debt, not accompanied by any lien. This qualification, which is expressly established by the language of subdivision 4, as respects advances for necessities, is, by implication from the context, equally applicable to advances for insurance. Both clauses are *ejusdem generis*. As the libelant's advances to Tyson & Co. were not made for the purpose of procuring insurance, nor of paying off any lien held by Tyson & Co., subdivision 4 does not apply. Subdivision 5 cannot apply, for that evidently refers to a debt contracted directly and immediately for premiums, whereas the debt to the libelants is in effect a debt for money borrowed to repay an old debt for premiums owed to Tyson & Co.

To sustain this claim of lien would, in effect, nullify the evident general intent of section 2, which is to prevent both the long continuance of liens and their secret character. If the payment by the libelants of Tyson & Co.'s advances for premiums made from four to twelve months previous can be the foundation of a new lien, where no lien existed before, then, similarly, new liens could be created for old debts for supplies at any time during six years after the original debts arose. This is manifestly contrary to the object and the intent of the statute. Even where the original supply men had neglected to comply with the statute by filing specifications within thirty days, and so lost their liens, a reimbursement by a third person at the debtor's request, no matter how long after, would, upon the construction contended for, create new liens for these ancient supplies. I cannot give the statute such a construction. A different question would have been presented had the libelants been originally liable to Tyson & Co. for the premiums, as guarantors or otherwise, but the evidence of Mr. Gourlie excludes that question, as he denies any original liability. The libel must, therefore, be dismissed. *Fed. Rep.*, Vol. 61, p. 507.

STEAM TOWING MACHINES.

During the past ten years there has been a great amount of thought expended and considerable experimenting done to produce a practical steam towing machine for towing barges with a wire cable, but the steam towing machine patented by Shaw & Spiegle is the only practical machine that has ever been produced either in this country or in Europe, and practical experience for four years on two different vessels proves the entire practicability and convenience of the above mentioned machine, and there is no question but what this machine is bound to come into general use for steam towing. It avoids the necessity of handling the tow line, as with this machine the tow line is pulled in or let out automatically at any time when going around corners or through crooked channels, and it is one of the most convenient and effective machines for steam towing that has ever been produced in any branch of business. Parties contemplating transporting freight on the water will find it to their advantage to look closely into this machine, and they will not fail to adopt it as the only practical solution of the question. The American Ship Windlass Co., of Providence, R. I., are the exclusive manufacturers of this machine under the patents.

CANADIAN CANALS.

In a review of the canal system of the Dominion the *Canadian Manufacturer* quotes Sir Charles Tupper's recent remarks on the early opening of the new Sault Ste. Marie canal and the completion of a system which enables Canada to have unbroken water communication from the Atlantic Ocean to the western shores of Lake Superior. This long chain of river ways, lake navigation and canals, was not realized without much engineering skill, enterprise and expenditure. The amount expended on the canals of the Dominion down to the 30th of June, 1893, formed a total of \$71,310,793.46, the total revenue received being \$9,850,578.56.

It is noteworthy that although in time, as in place, the Sault Sainte Marie canal, as now constructed, is the last link in the long chain, the attempt to establish communication between Lakes Huron and Superior was made before the close of last century, and, therefore, at a very early stage in the development of canalization in Canada. An interesting account of the undertaking appeared in one of the Reports of the Dominion Archivist. In his paper, on "The Canals of Canada," presented to the Royal society in May, 1893, and published in the Transactions of that learned body, Mr. T. C. Keefer, C. M. G., C. E., returns to the subject. One of the North-West fur trading companies of Montreal cut a roadway, he tells us, 45 feet wide across the portage on the Canadian side of the Sault, and opened a canal upward of 300 feet in length, with a lock that raised the water 9 feet. This lock, 38 feet long and 8¾ feet wide, was built like a flume, the posts of which, at the lower end, were high enough to permit boats to pass under their caps. A windlass raised the lower gates, but the upper ones were folding, with sluices therein to fill the lock. Into this lock the boats were conducted by a planked flume 300 feet long and 6 feet high, and just the width of the lock itself. A round log cribbing extended the length of the canal, 12 feet wide, forming a towpath for the oxen that drew the boats up stream. As the lock dealt with only half the height (18 feet) of the fall, the surface inclination above was three feet in the thousand. This canal was completed in 1798, but in July, 1814, the adjoining post was pillaged and burned, and the lock (with the wooden banks of the canal) was, it is supposed, burned to the water's edge. Between the building of this primitive Sault canal and the construction of the work of the same name, more than ninety years intervened. In 1815 the legislature of Lower Canada voted a grant of money to build a Lachine canal, and in 1816 a joint committee of the two Houses of the Upper Canadian Legislature was appointed to report on inland navigation. Although Adam Lymburner had advocated its construction in 1791 and, indeed it had been thought of nearly a century earlier by Dollier de Casson—Catalogne taking up in 1717 the scheme of which his death has prevented the accomplishment—it was not until 1821 that commissioners were appointed and in 1825 the work was completed. Meanwhile a company had been formed to build the Welland canal, and in 1824 first ground was broken. In 1834 the St. Lawrence system was commenced. Meanwhile the Rideau had been started as a military work, so that, when the union regime began, the united provinces were well advanced on the path to the goal now in view. The British North America Act enlarged the sphere of canal enterprise, both as to area and accommodation, and how the country's increasing needs were met both in the main and branch lines Mr. Keefer's paper brings out with clearness and accuracy.

It was contemplated from the first that the system should have its western terminus on Lake Superior. Even before the canal was begun on the Michigan side, surveys and estimates were ordered by the province of Canada. It was not, however, until 1889 that the first contracts were entered into. Owing to representations of persons concerned, a supplemental agreement was made in the summer of 1891, and further changes were ordered in April, 1892. By this final contract it was determined that the length of the chamber should be 900 feet, the width 60 feet, throughout, the depth 20 feet 3 inches in the sills at the lowest recorded stage of the water in the river below the lock. The canal passes through St. Mary's island, on the north side of the rapids of River St. Mary. The length across the island will be 3,500 feet; with the approaches, the total length will be about 18,100 feet. It was at first agreed that the work should be completed on the 31st of December of the present year, but subsequently it was deemed desirable that an earlier date should be fixed upon and by the final agreement with the contractors, the 1st of July, 1894, was the term chosen for the execution of all the works. By the modified scheme accommodation will be afforded to three vessels lying in dock one behind the other—one of the lake type, 320 feet long, and two of the Welland canal type of 225 feet long, with ready means of entrance and exit on a course through gates and lock straight with the line of the canal. The latter will have a low water width of 152 feet, a bottom width of 145 feet—the low water depth suiting vessels drawing 20 feet. The total expenditure down to 31st December last was \$2,243,890.75.

IMPROVING THE ERIE CANAL SYSTEM.

State Engineer Adams has transmitted to the constitutional convention an estimate for the proposed canal improvements. In his statement the state engineer says:

In the work of deepening the canals to nine feet it should be understood that all former estimates bearing on this subject have contemplated only the raising of the banks one foot and deepening the bottom one foot between structures. The purpose of such improvement was not to permit the passage of boats of greater draft, but to facilitate the passage of the boats already in use by increasing the sectional area of water and thereby decreasing the resistance to traffic. This improvement would doubtless allow the boats now in use, without increasing their size, to carry fifty tons additional. Fifty tons added to the load of a horse boat carrying two hundred and fifty tons would add over one-fifth to its paying load. An increase of one foot draft to a propeller and its consort would enable them to carry an additional load of one hundred tons. If the boats should carry only the loads they now take they could with this improvement save nineteen hours between Buffalo and West Troy, and single boats with 25 tons more load than at present with same draft on horses could save about six hours. It is evident then that any propeller, however actuated, would have greater power from deeper immersion. The most serious obstacle except of embankments to raising the banks as proposed would be the raising of all bridges and the changing of street grades, especially in the cities and larger towns. In any radical plan for the improvement of the canals the sources of water supply are of the first importance, but it is believed that the present sources would be adequate for the above improvement. However some of the feeders have only a very slight fall towards the canal, and it would doubtless be found necessary to raise the dams at the source of supply in a few cases, and it would probably be necessary to utilize to a greater degree the supply from the Genesee River. To raise the water surface of these canals two feet would probably cost three times the amount of the estimate as shown, and to lower the bottom two feet would unquestionably increase the estimate ten fold as it would necessitate taking down and rebuilding nearly every structure on these canals. It would hardly seem that either of these latter plans would be judicious in view of their great cost and the comparatively small benefits to be derived therefrom, as it would in either case still be necessary to transfer all cargoes from lake ports at Buffalo the same as under existing conditions.

The additional handling of through freight is a large item in the cost of its transportation, and it would seem that any radical plans for canal improvement should aim to avoid the cost and delay incident thereto. I am convinced that any plan for canal improvement more radical than the one first above discussed and less radical than for a ship of twenty feet draft would not produce results commensurate with their cost. As to the cost of such a ship canal I will make a special report in the near future. On the Champlain Canal the present depth of water is five feet, except one-third of the total length, where the depth is six feet. To obtain nine feet of water in this canal would practically mean the annihilation of the present waterway and the rebuilding of an entirely new canal, as nearly every structure would have to be rebuilt, and for economical reasons it would undoubtedly be found desirable to change a great portion of the present route. Many of the structures are already worn out, and practically none of them would admit of enlargement for nine feet of water. Moreover it would be necessary to raise the dams at Northumberland and Cohoes, and it is almost certain their present construction would not admit of their being raised without practically rebuilding them.

The above will also apply to the Black River canal, which is believed to be in worse condition physically than the Champlain canal. The Cayuga and Seneca canal already has the same form of prism and depth of water (seven feet) as the Erie canal and presents no more serious obstacles to enlargement to nine feet of water than the Erie canal. The Oneida lake canal, from Brewerton to the Oswego river, about twenty miles, now has four and one-half feet depth of water, and if this be increased to nine feet the greater part of the work must be done by deepening or else by an entire change of route. The following estimate indicates approximately the cost of obtaining nine feet of water in the several canals:

Erie canal.....	\$5,310,000
Oswego.....	1,208,000
Champlain canal.....	4,300,000
Black River canal.....	8,880,000
Cayuga and Seneca.....	260,000
Oneida River canal.....	335,000
Total.....	\$20,293,000

The above estimates complete the most permanent work possible, to the end that the cost of repairs shall be reduced to the minimum.

The cost of cleaning the canals to their present depths is estimated as follows:

Erie Canal, \$600,000; Oswego Canal, \$50,000; Champlain Canal, \$150,000; Black River Canal, \$90,000; Cayuga and Seneca Canal, \$40,000, and Oneida River Canal, \$25,000.

No systematic lengthening of locks has been done on any of the canals except on the Erie and Oswego canals. The probable cost of lengthening all locks on the Erie and Oswego not already lengthened to a uniform depth is easily obtainable. On the Erie Canal proper there are seventy-two locks, of which thirty-nine have already been enlarged at an average cost of about \$35,000, and one is now in course of enlargement. Of the remaining number five are in the series at Lockport, and sixteen are in the series known as the "sixteens," between West Troy and Cohoes. Nothing has been done with these series heretofore as the various State Engineers have not thought it advisable to ask for the necessary appropriations, nor to recommend the work, because the benefits to be derived therefrom did not seem to warrant the expenditure.

On the Oswego Canal there are eighteen locks, eleven of which have been enlarged. On the West Troy side there are two locks and two more on the "Port Schuyler side cut," which in my opinion should be lengthened if all others are lengthened. I estimate the cost of lengthening the above remaining forty-three locks to be \$2,755,000.

Retaining walls are needed to a greater or less degree on all of the canals, and \$1,000,000 could be used to good advantage in this work. Many of the old walls have been poorly built and should be promptly repaired. There are also many places where paving on the outer slopes of the banks is as necessary as retaining walls, to protect against the washing of adjacent streams.

THE DISTANCE FROM ELEVATED OBJECTS.

The following table gives the elevation of objects above lake level with their corresponding distances of visibility.

Distances corresponding to heights not included in the table may be found by the formula $D = \frac{1}{2} \sqrt{7H}$, in which H = the elevation, or height, in feet, of the object above the lake level, and D = the corresponding distance of visibility, in statute miles. The formula is based on the mean curvature of the earth and is corrected for ordinary atmospheric refraction.

Heights feet.	Dist. in statute miles.	Heights feet.	Dist. in statute miles.	Heights feet.	Dist. in statute miles.
5	2.96	70	11.07	250	20.92
10	4.18	75	11.46	300	22.91
15	5.12	80	11.83	350	24.75
20	5.92	85	12.20	400	26.46
25	6.61	90	12.55	450	28.06
30	7.25	95	12.89	500	29.58
35	7.83	100	13.23	550	31.02
40	8.37	110	13.87	600	32.40
45	8.87	120	14.49	650	33.73
50	9.35	130	15.08	700	35.00
55	9.81	140	15.65	800	37.42
60	10.25	150	16.20	900	39.69
65	10.67	200	18.71	1000	41.83

The distances of visibility given in the above table are those from which an object may be seen by an observer whose eye is at the lake level; in practice, therefore, it is necessary to add to these a distance of visibility corresponding to the height of the observer's eye above lake level.

EXAMPLE.—Twin River Point Light seen just at the horizon, what, under ordinary conditions of the atmosphere, is its distance from the observer?

Height (according to U. S. list of lights and fog signals,) 110 feet distance visible (according to table) 13.87 statute miles. And distance corresponding to height of observer's eye above lake level, 15 feet = 5.12 statute miles. Distance of light 18.99 statute miles.

The distance of visibility of a light may be greatly augmented by abnormal refraction, which usually increases with the height of the barometer and a falling temperature.

EARNING POWER OF TURRET SHIPS.

The English whaleback type of cargo steamers, called over there turret ships, seem to have excellent earning ability. The following is from the *Transport*, London:

"How much depends upon the type in the matter of earning power is shown in the case of the 'turret' steamers, which have been specially designed to carry a maximum amount of cargo on a minimum net register tonnage. The Turret Steamship Co., Limited, has just announced an interim dividend at the rate of 10 per cent for the past half-year as the result of the working of their two steamers, the Turret and the Turret Age, and I shall be surprised if that figure at least is not paid for the current half-year. These steamers are chiefly engaged in the Canadian coal trade, for which they have proved peculiarly adaptable, their large hatches and long holds enabling them to give exceedingly quick despatch both in loading and discharging cargo."

LOCALITY CHARGED WITH ELECTRICITY.

Assistant superintendent P. A. Welker, of the United States coast and geodetic survey party, now stationed on the summit of Mount Elbert, in a letter to the department, describing the electric storms on the mountain, says in all his experience he has never seen anything to compare with the heavy lightning experienced. "Every day since we have been on the summit," he says, "we have had heavy hail or snow storms, accompanied by wind and the most terrific lightning and thunder storms that can be imagined. All of the lightning of the heaven seems to concentrate about Mount Elbert. At times the mountain is charged with electricity, numerous suspended electric lights can be seen, and almost everybody receives electric shocks."

"Considerable damage has been done by the lightning. The observatory, and new theodolite have twice been struck by lightning, the vertical circle has been struck and also the azimuth mark. Lightning struck the peak four times. The sunshade at the end of the telescope was pierced twice and the molten metal spattered over the objective, and Y's and pivots were badly burnt, also the foot screws and about one-quarter of the object glass was shattered."

"The theodolite pier was so shattered by the lightning that it was necessary to rebuild it. The vertical pier was also shattered, but the instrument was not much damaged. Our camp is within 200 yards of the observatory and in rather an uncomfortable position during the storms."

THE INVENTION OF THE SCREW PROPELLER.

The introduction of the screw propeller into use was accomplished simultaneously by Smith in England and Ericsson in the United States. Both were men of great ability. Each considered himself the inventor of the screw propeller. Each took out patents in England in 1836 and in the United States two or three years afterward. Each patent differed radically from the other. Neither patent, for the general application of the screw propeller, was sustained either here or abroad, and neither Smith nor Ericsson patented additional improvements on the screw propeller. Each built small screw vessels in England that were successfully tried in 1837, Smith's being of six tons burden, with a wooden screw, driven by a 6 horse power engine, and Ericsson's, named the Francis B. Ogden, having about double the tonnage and power. Each built larger screw vessels that were successfully tried in England in 1839. Smith's vessel, the Archimedes, being upward of 200 tons burden, and driven by engines designed by Renie, of 90 horse power, circumnavigated the island of Great Britain in May, 1840. Ericsson's vessel, the Robert F. Stockton, smaller and with less power, was tried in England under steam, and then, in April, 1839, crossed the Atlantic under sail. Each introduced the screw propeller on merchant vessels in 1840. Each introduced the screw propeller on war vessels in 1843, Ericsson on the Princeton and Smith on the Rattler.—F. B. Stevens, in *Cassier's Magazine*.

CHINESE AS NAVAL STUDENTS.

A correspondent of the London *Times*, writing a little while ago from Che Foo, seems to think that some part at least of the Chinese navy may prove a good deal more effective than it is generally supposed to be. He says: "Well aware that the mere possession of costly ships and modern guns goes only a little way toward affording national security, Viceroy Li seems resolved to have the crews as well trained as is possible. The schools of instruction are vigorously supported, competent European officers are at their head, and the results are surprisingly good. The Chinese are a most teachable people, and there is no kind of exercise at which they do not quickly become expert. The battalion drill of the blue-jackets at Weibaiwei, who have been trained by Lieutenant Bouchier, R. N., excited universal admiration. The exercises could not have been better done; the men were smart and evidently in the best spirits. They do semaphoring work exceedingly well, and, in fact, everything which can be taught by men to men the Chinese learn and practice well. The scientific branches are also thoroughly looked after. They have German torpedo instructors, English and German gunnery instructors, and professors of astronomy, chemistry, mathematics, etc. The Chinese officers are consequently perfectly trained in everything that pertains to the naval profession, and they are apt pupils, as every tutor who has had to do with the education of Chinese youths will testify. They are handicapped by having not only to learn, but practically to carry on their work in a foreign language. This, in the navy, is English. The signal book, compiled by Capt. Lang, is in English, and the drill books, in which the proper drill for every gun in the service has been elaborated by Lieutenant Bouchier, are also in English. The peculiar structure of Chinese necessitates the use of some alphabetic language, for Chinese ideographs cannot be telegraphed. Hence the men have to learn at least as much English as enables them to spell out words in semaphoring, and the officers are obliged thus to communicate in English."

THE MARINE RECORD

ESTABLISHED 1878.

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CLEVELAND, O., AUG. 9, 1894.

A BILL appropriating \$5,434.18 to reimburse an outlay incurred by the American Transportation Co. for dredging at Fairport Harbor, O., has passed the House and Senate.

A BOTTLE picked up on the beach at Harbor, O., fairly demonstrates the drift as outlined by the Weather Bureau on Lake Erie. If the messenger was a faithful one it came from the head of the lake, and according to the set as shown by the current chart, drifted from there to the south shore.

THE life saving service will be continued on the coast for two months longer each year, thus making the service extend over ten months instead of eight as formerly. It is to be regretted, however, that the monthly pay of the surfmen has been reduced from \$65 per month to \$60. On the other hand, the benefits of the marine hospitals are given to the keepers and crews of all stations, thus in a measure offsetting the reduction of pay at coast stations, even if the two months extra work is not considered. Senator Frye championed what he considered the best interests of the service and it is chiefly to him that the life saving corps is indebted for the two months extra service and marine hospital privileges.

AND now it is desired to signalize the planet Mars from this sphere. M. Flammarion, the French astronomer and his colleagues, want to earn the 100,000 francs left to the person in the Institute of Paris who shall find means of communicating with a planet, Mars preferred. Canals, continents, lakes, snow-capped mountains and human life is already admitted, and now all the astronomers need to do is to invent a system of exchanging views with the star gazers in Mars. Prof. Henry M. Parkhurst is not so sanguine however as many others, and cites the illustration that if a candle light could be seen under the most favorable conditions one mile, it would be necessary for an illuminated signal from this earth to be as much brighter than a candle as the sun is brighter than a star. He further makes the computation that to produce one of the points of light that has been seen in the planet Mars it would require 2,500,000,000 candle power, and the strongest light ever yet attempted, that which the United States government is going to place on Fire Island, N. Y., is only expected to throw a gleam 100 miles, yet 40,000,000 miles of space would have to be covered to reach the fifth planet in the order from the sun and forty million miles from the earth when in opposition, which occurs only once in nearly two years. Space and time is being daily economized, if not annihilated, but conversing with individuals from forty millions to upwards of two hundred million miles away is, to say the least, beyond the comprehension of this generation.

FLUCTUATION IN LAKE LEVELS.

Much has been written and said upon the subject of the fluctuation of the level of the lakes, many observations have been taken and many theories advanced to explain their cause. Mr. Guthrie, of Chicago, says: "There are three separate, distinct and well defined fluctuations, one of which—viz.: the season fluctuation—has heretofore, so far as my knowledge extends, entirely escaped observation. The change occasioned by the wind, or rather, perhaps, more correctly speaking, change of barometer, being so well understood, requires little explanation. For example, a sudden rise at Mackinaw foretells a south wind; a sudden rise at Chicago, wind from the north, the water generally preceding the wind several hours, and here it would seem proper, in explanation of that phenomenon, to suggest that, before any wind be felt, an area of low barometer must exist, and should it be found to be in the vicinity of Chicago, the

water would rise to a height corresponding to the reduced pressure and continue to rise until the wind had reached its maximum velocity.

The season changes before referred to, occurring as they do with the regularity of the seasons, are caused by the changes from winter to summer and summer to winter, the frosts of winter holding the snow and ice in reserve to augment the rainfall of spring, until the month of May, ordinarily, and the lakes begin to rise and continue to rise until about the close of August, when they begin to recede and continue to do so until the minimum stage is reached. The periodical changes occurring at irregular intervals, as well as being irregular in degree have received much more attention than the others, and the conclusions reached have differed very widely. The following is one of the many erroneous ones:

"The rise and fall of the Great Lakes is something scientific men will some time have to investigate and find out about. Old settlers on Grand Traverse Bay say that the water slowly rises for seven years and then recedes for the same length of time."

Fortunately for us now, we have two sets of records of date which will enable us to reach correct conclusions, viz.: the records of the U. S. Engineer's office, showing the fluctuations of the lakes to the most minute detail since 1855, and the Weather Bureau observations, giving the rainfall, temperature and wind since 1871. We find, by referring to the stage of water in Lake Michigan, that the year 1876 was one of the high water periods—three to four feet above datum or low water stage in 1879, and the highest but two from 1855 to 1883 inclusive. Referring to the Weather Bureau records, we find the rainfall excessive in one season around all the stations of Lakes Superior, Huron and Michigan, except Duluth, and that barely below mean (the water of Superior flowing into and effecting Lake Michigan), so that the level of the lakes showed a rise during that year. Also in 1872, when the stage of water was the lowest of the whole series, rainfall was below mean at every station. Looking over the diagram showing the stage of water in 1879, as compared with the four succeeding years, we find it very low, and the rainfall of that year correspondingly light, while from 1880 to 1883 inclusive the rainfall was excessive and the water correspondingly high. There is no record showing that the low stage of 1846 has since been reached. On the other hand, three feet nine inches above was reached in 1859 and 1860 and about three feet within the last year or two."

SALVAGE SERVICES.

The question of recompense for salvage services has undergone a decided change during the last quarter of a century, and a more equitable and common sense view of the subject now obtains as a general result in all admiralty decisions and courts having jurisdiction to settle maritime cases of litigation or arbitrement.

The decisions formerly rendered, in all cases, allowed the salvors usually about one-third of the gross value of the property salvaged, and as the claim for salvage predominated over all others, except sailors' wages, the salvors were legally in a position to have and to hold until their claims were settled, besides the question of marine salvage has been so regularly and clearly admitted that no trouble, legal or otherwise, was ever experienced in the settlement of these claims. When marine interests became more widely developed, and a better and clearer knowledge of the services rendered were placed in an intelligent manner before the various judges, the old custom was found to be lacking in the effect of a righteous decision and remuneration commensurate with the services rendered was considered a more justifiable mode of administering the laws. This knowledge was not long in gaining ground before all of the marine courts, and as a consequence the modern system was inaugurated to the benefit of trade and commerce all over the world.

The instance of a derelict vessel prematurely abandoned near the coast-line might be cited as showing the advisability of the modern departure relative to salvage claims. In this case the salvors underwent little or no risk either to life or property, and the vessel was taken safely into an adjacent port without incurring any great risk or expense, yet, such was the nature of the old-time salvage claims that the vessel after being libelled was sold to satisfy the claims of the salvors, and both the underwriters and the owners might be said to have suffered a serious loss.

In recent decisions the salvors are only awarded a sum sufficient to remunerate for the services rendered, or in other words, ordinary services are paid for as such, and if there is extraordinary and imminent risks proved during the rendition of the services the claims are settled liberally if not generously.

Under the code that now obtains throughout the maritime world all attempts to save life and property, when successful, are duly and fully recognized even where no agreements relative to costs of services have been previously arranged by the interested parties. Certainly we believe that a generous policy ought to be maintained

and that adequate remuneration should in all cases be tendered to those who risk life and property in any emergency, whether their ultimate object may be to alleviate the sufferings of humanity or to increase their resources financially.

MAGNETISM OF THE COMPASS.

In this progressive age a wider knowledge of compass deviation and the science and laws of magnetism will have to be more generally recognized by lake mariners who wish to maintain their excellence in the profession.

The importance of this particular branch of the business will grow equally with our increasing and important modern shipping, and the development of the laws of magnetism as affecting the compasses of iron ships is a subject that must engage the attention of the lake marine community in the future. Even allowing that compasses are, in the first place, carefully and accurately constructed, and that all modern improvements and mechanical skill are used in the several parts of the instrument, there may still be abundant room for errors to creep in, and it might often be remembered to advantage when fitting out a vessel that the compass that costs the least money is very seldom the cheapest in the end, for a well-made instrument will cost less for repairs, and will be more reliable in cases of emergency during thick weather, etc., will last longer and give better satisfaction than an inferior article.

But we must not stop here, for, after securing a good and reliable compass, the most suitable location on the vessel will have to be ascertained, and then the resulting errors accurately determined and regularly tabulated afterwards by means of well known, correct magnetic bearings and a careful supervision at all times of the workings of the instrument upon which so much depends.

It would seem to us a rational mode if we treated and looked upon our compasses more in the light of a watch, or barometer or any other mechanical appliance subject to the usual defects and inequalities of workmanship, and not as an infallible guide and natural determinate piece of correction, as is so frequently done now. As true as the needle to the pole is an exploded aphorism so far as modern navigators are concerned, and the question remains, not how to make and have the needle true, but how to keep well posted in its variations and irregularities during the course of changes it undergoes in moving from one point or locality to another. We are not to suppose that the compass is sometimes right and at other times wrong, for there must be a direct uniformity when the same or similar agencies are at work, whether we comprehend the causes or otherwise. It does not require a very intricate or difficult study of the science of magnetism to acquire a knowledge of these agencies, but it simply asks for the usual precautions of being observant and noting bearings as they regularly occur during a change of course and latitude, also has it been passed along from hearsay, how that a flash of lightning has depolarized the magnetic needle, and a local cause taken control, so that the compass would be in error on almost every point you might swing it to.

Yet, at present we believe that we contribute ourselves, more generally than is supposed, to form the errors of an otherwise tolerable instrument, just in a similar way as by rough or thoughtless usage of a time-keeper it is thrown out of its usual running order, and the instrument blamed for inaccuracy instead of the owners thereof; consequently, the possessor of a well balanced and even working compass ought to prize it accordingly, for it is not every sea-clock that, even with a fair show, will act as it ought to.

LAUNCH OF THE ISAAC W. NICHOLAS.

The Cleveland Ship Building Co., Cleveland, O., once more comes to the front in national marine architecture with the fine steel freight steamer Isaac W. Nicholas, capable of carrying about 5000 tons on what would be considered a moderate draft on the seaboard.

On Saturday afternoon at 2:30 standard, or 3 o'clock sun time, the Nicholas will be launched according to contract time made with her builders, and but a short period will elapse before this fine steamer, rated A1* in the Bureau Veritas will be placed in commission.

As yet the hull remains stationary under the signal or builders number of 20, later she will honor one of the oldest marine men on the lakes by carrying to all lake ports of importance the well known name of Isaac W. Nicholas.

As an authentic and positive record we note that the above named steamer is 342 feet over all, from stem to stern post 324 feet, beam 42 feet and depth 27 feet. She has 4 feet sheer forward and 2 feet sheer aft. The main floors are of plate and angles, spaced 2-foot centers, extending from the center keelson to the top of the water-bottom. The main frames are bulb angles, spaced 2-foot centers, and extend from the water-bottom to the spar deck. The spar deck is of steel and the main deck of wood. There are 10 hatches 8 feet wide by 29 feet long, spaced 20-foot centers. All of the steel

used in the construction of this ship is the Carnegie Steel Co's open-hearth steel. Some special features of her construction are as follows:

She has three girder keelsons on each side of the center keelson, extending from stem to stern in one piece, not stopping at bulkheads. The middle one of the three girder keelsons is intercostaled between every frame and tied to the skin of the ship, which makes a very much stiffer bottom. The water-bottom is 4½ feet deep, and is divided into eight water-tight compartments. The lower hold is divided into three separate water-tight compartments. Four cargo gangways on each side of the ship, with ports made of one plate each, having special arrangement for hanging and lifting. Each of the hatches are supplied with double hoisting drums, operated by paper frictions, and a main line of shaft, which in turn is operated by a 12 x 12 vertical high-pressure engine.

The finishing is the regular steamer style of cabins, with the captain's, mate's and wheelmen's quarters located forward, and the quarters for the balance of the crew located in the deck house amidships and in the cabin aft. The captain's quarters and dining room are handsomely finished in the finest paneled, quarter-sawn oak, and all other rooms in the boat are finished in quarter-sawn oak ceiling, laid straight, diagonally, and various ways to give variety to the different finish of the rooms. She has a Williamson Bros.' steam steerer located on the main deck directly under the pilot house, and connected with chains and wire rope direct to the quadrant. The American Ship Windlass Co.'s new design windlass and capstan located forward, and the same makers' capstan located aft. There is also one of the builders' double 8 x 8 hoisting engines located on the spar deck, and she carries two pole spars.

The propelling machinery consists of the builder's famous triple-expansion engines, having high-pressure cylinder 20 inches diameter, intermediate 33 inches diameter, low pressure 34 inches diameter, with a common stroke of 40 inches. Two Scotch type boilers, each 12 feet 4 inches diameter, 13 feet long, capable of carrying 170 pounds working pressure. Propeller wheel 13 feet diameter, 15 feet pitch, which, when turning 75 revolutions per minute, is expected to drive the loaded ship eleven and a half miles per hour. The boat is expected to carry about 3,200 gross tons of iron ore on a draught of 15 feet.

If everything goes as the builders anticipate, they expect to have this fine vessel ready for sea about September 15th, and the previous record of the Cleveland Ship Building Co., eminently determine that she will be ready for work on the date appointed.

LIGHT-HOUSE OFFICERS ON THE LAKES.

The list of lights and fog signals of the United States on the northern lakes and rivers and also the lights and fog signals of the Dominion of Canada for those waters corrected to the opening of navigation, 1894, has been issued by the U. S. Light-House Board, Washington, D. C. A copy of the list will be sent free of charge to any shipmaster on application to the Board or to the offices of the Light-House Inspectors at Chicago, Buffalo or Detroit.

The three Light-House districts and the local officers in charge are as follows:

NINTH DISTRICT.

Includes all aids to navigation on Lake Michigan, Green Bay and tributary waters lying west of a line drawn across the Straits of Mackinac, at a point just to the eastward of Old Mackinac Point light-station, Michigan.

Inspector—James H. Dayton, Commander, U. S. Navy, room 1,308, Chamber of Commerce Building, corner of Washington and La Salle streets, Chicago, Ills.

Engineer—Milton B. Adams, Major of Engineers, U. S. Army, 18 Bagley avenue, Detroit, Mich.

TENTH DISTRICT.

Extends from the mouth of the St. Regis river, New York, to the River Rouge, Detroit river, Mich.

Covers the United States shores and waters of Lakes Erie and Ontario, and the St. Lawrence, Niagara, and lower part of Detroit rivers.

Inspector—James G. Green, Commander, U. S. Navy, Post-Office Building, corner Washington and Seneca streets, Buffalo, N. Y.

Engineer—Jared A. Smith, Lieutenant-Colonel of Engineers, U. S. Army, Hickok Building, 185 Euclid avenue, corner of Erie street, Cleveland, Ohio.

ELEVENTH DISTRICT.

Extends from the River Rouge, Detroit river, to the head of Lake Superior.

Covers the United States shores and waters above the River Rouge, Detroit River, Lakes St. Clair, Huron and Superior, part of the Straits of Mackinac and the St. Marys river.

Inspector—William W. Mead, Commander U. S. Navy, 80 Griswold street, Detroit, Mich.

Engineer—Milton B. Adams, Major of Engineers, U. S. Army, 18 Bagley avenue, Detroit, Mich.

THE BEST SORT OF GROUND TACKLE.

The Lebanon Chain Works, Lebanon, Pa., have just completed contract and made shipment of

600 fathoms 2 in. U. S. Gov. light vessel chain.
120 " 1¾ in. " " "
120 " 1½ in. " " "

to the 3rd Light-House District, Tompkinsville, N. Y. Inspection and tests having been very satisfactory.

This is an exceedingly fine lot of chain and they certainly deserve a great deal of credit for having so successfully made it.

We understand that the test and requirements on this chain are higher and more severe than on any other grade of chain made in this country and their ability to successfully complete a contract of this kind, proves them able to make any known grade of chain.

LAKE FREIGHTS.

Ore and coal freights are looking up and an advance of 5 cents has been made during the week on coal to Milwaukee and Marquette ore. Lake Superior coal rates from Ohio ports hold steady at 40 cents with a probability of a 5 cent raise during the next few days; Manitowoc, 45 cents; Milwaukee, 50 cents. Ore freights are generally quiet, and with the exception of the advance noted, former prices prevail, Escanaba chartering being done at 40 cents. The Buffalo coal rates are 50 cents to Milwaukee and 30 cents has been paid to the head of the lakes, making a 5 cent raise on former quotations. Canal freights are quiet at 3½ cents on wheat to New York. Chicago grain rates have been from ¾ to ⅞ cents with little offering. Toledo wheat to Buffalo is 1 cent and to Chicago, for the shipments still continue, 1¼ cents.

On the whole the freight market seems to be improving and with large shipments of coal and ore there is no reason why an upward tendency should not set in for the remainder of the season.

LAKE QUARANTINE REGULATIONS.

Judge Daniels succeeded in getting a bill through the House on Tuesday afternoon which will, when signed by the President, have an application to the Great Lakes. The bill relieves from the operation of the quarantine act of 1893 vessels plying between foreign ports near the United States and United States ports, but authorizes the Secretary of the Treasury to make special regulations for such lines. The act in question provides that boats making these trips, which are principally excursion and ferry boats, shall be required to have a consular certificate regarding the state of health of the passengers aboard. Judge Daniels called the bill up on Tuesday and made a few explanatory remarks before allowing it to be voted upon. His short address was so convincing that the bill passed without debate and with only a few dissenting votes. It was generally considered that a Federal supervision ought to be exercised over the inland seas.

AN INSURANCE POLICY.

The small propeller Skater, now hailing from Manistee, Mich., was insured in several companies. The North British & Mercantile Co. advised their agent to cancel their policy. The agent persuaded the St. Paul to write the same policy, but before it was delivered the Skater burned. The North British paid the policy, but then sued the St. Paul, claiming that the St. Paul had made the policy, but failed to deliver it when the boat burned. The North British has just recovered the money in Circuit Court.

MAKING USE OF A RAM.

The United States cruiser Atlanta, Capt. J. R. Bartlett, arrived at Newport, R. I., from Boston on Saturday morning. Her bow presented a much marred appearance, the white paint being scraped off in streaks where she rammed the floating wreck of the Golden Rule, about twenty-five miles southeast of the new South Shoal light. She sighted the wreck, bottom up, about 100 feet off her course. It had the appearance of being anchored by the bow, and was a dangerous obstruction to navigation. The Atlanta was cleared for action and a couple of broadsides were fired at the derelict, but the shot went clear through the hull without doing much damage.

Having no torpedoes on board, Capt. Bartlett decided to try the ramming tactics. First a light blow was delivered at the stern to see what condition the wreck was in. She was found to be practically new, but gave way readily to the ram. Another blow was made upon her quarter to learn what her cargo consisted of, and it proved to be empty barrels. Next the Atlanta drew off and approached the schooner at full speed, striking her amidships. The schooner was so light and the ram so deep that she was thrown away from the Atlanta and righted, though the blow cut a gash half through her. A second ram was made and the schooner was cut in two. The Atlanta's engines were disabled, being in poor condition, and the warship was obliged to withdraw

under sail, while the sternpost of the schooner drifted off toward George's banks and the bow still remained anchored. Capt. Bartlett would have destroyed the whole craft if possible, but the crippled condition of his vessel prevented. About two hours were consumed in the work. The Golden Rule was cut to the water's edge on July 20 by the steamer Chattahoochee, which took off her crew of seven men and one passenger. She was then off South Nantucket Shoals from Ponce for Boston, with molasses.

THE OLD GUNBOAT MICHIGAN.

It is likely that the old gunboat Michigan, which has so long been familiar as the only ship of war on the Great Lakes, will be turned over for the use of the Michigan naval militia under the act recently passed by Congress and signed by the President for the promotion of the efficiency of the naval reserve or militia. Senators McMillan and Patton, of Michigan, are interested in endeavoring to secure this vessel for their state. Under the new law the Secretary of the Navy is authorized to loan temporarily to any state, upon the written application of the governor, a vessel to be selected from such as are not suitable or required for general service, together with her apparel, charts, books and instruments of navigation. This vessel may be used by the regularly organized naval militia of the state for the purposes of drill and instruction. When the loan is made to the governor, the Secretary of the Navy is authorized to detail from the enlisted force of the navy a sufficient number of men, not exceeding six, as ship-keepers, the men so detailed to be additional to the number of enlisted men allowed by law for the naval establishment, and in making details for this service preference shall be given to men who have served twenty years or more in the navy.

LIMITED FUEL CAPACITY.

The board of officers representing the government have finished their work on the data taken on the recent trial of the Minneapolis, and according to their report the engines developed 20,812 horse power on the run, giving a mean speed of 23,073 knots per hour.

Three trials of eight hours each were made on the trip from Boston to Philadelphia, in order to determine the most economical steaming speed of the vessel. They were made with single, twin, and triple screws, with the following results:

	Speed. (Knots)	Horse Power.
Single screw.....	9.735	1,940
Twin screws.....	9.71	2,015
Triple screws.....	11.6	2,530

From the single-screw performance, which is the most economical, it is found that the Minneapolis can steam about forty days at a speed of 9¾ knots per hour, giving her a steaming radius of 9,600 miles, or less than half way around the world. It is believed by the public in general that the Columbia and Minneapolis can steam around the world without coaling, but the above data show that such is not the case. When steaming at full speed they burn 500 tons of coal per day, thus being able to steam at this rate only four days.

DAMAGES FOR CANADIAN SEALERS.

Some time ago Secretary Gresham submitted to the Senate committee on foreign relations a proposition to settle the damages to Canadian sealers prosecuting their fishing in the Bering sea, and which were seized by the United States vessels previous to the Paris arbitration. The amount of damages will have to be ascertained, and the only question involved is the manner in which this is to be accomplished. It is probable that a board will be created which will be composed of commissioners of both the United States and Great Britain, although it is possible that certain officers already in the diplomatic service of both countries may be designated to act. Each person claiming damages by reason of seizure will be allowed to present his claim and submit evidence in support of it. The United States government, through the Department of Justice, will lay before the board any evidence tending to show the defects of the claims, and take such steps as are necessary to prevent fraudulent claims being assessed against the government. It is expected that the Senate committee will report the details of a proposition of settlement, and it is probable that it will be adopted before the end of the session.

MERCHANT MARINE FOR MEXICO.

United States Minister Gray reports that Mexico is starting to establish a merchant marine by offering ship builders bounties and other privileges. An official decree, published June 12, permits foreigners to acquire Mexican vessels without restrictions upon them and the composition of crews, and prescribes the relation of the various bounties to be paid.

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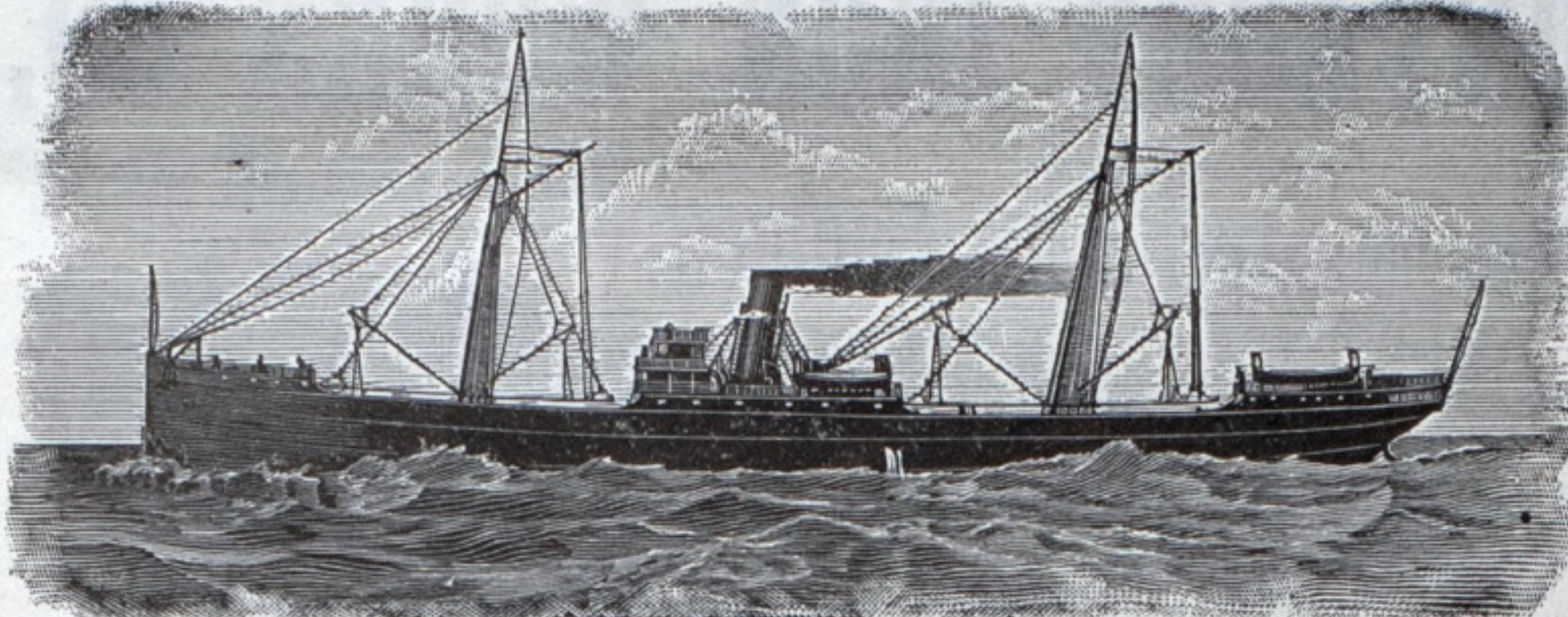
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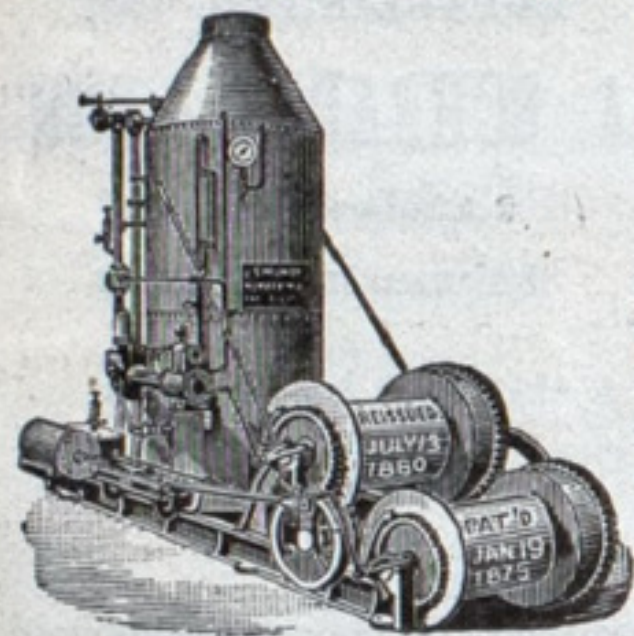
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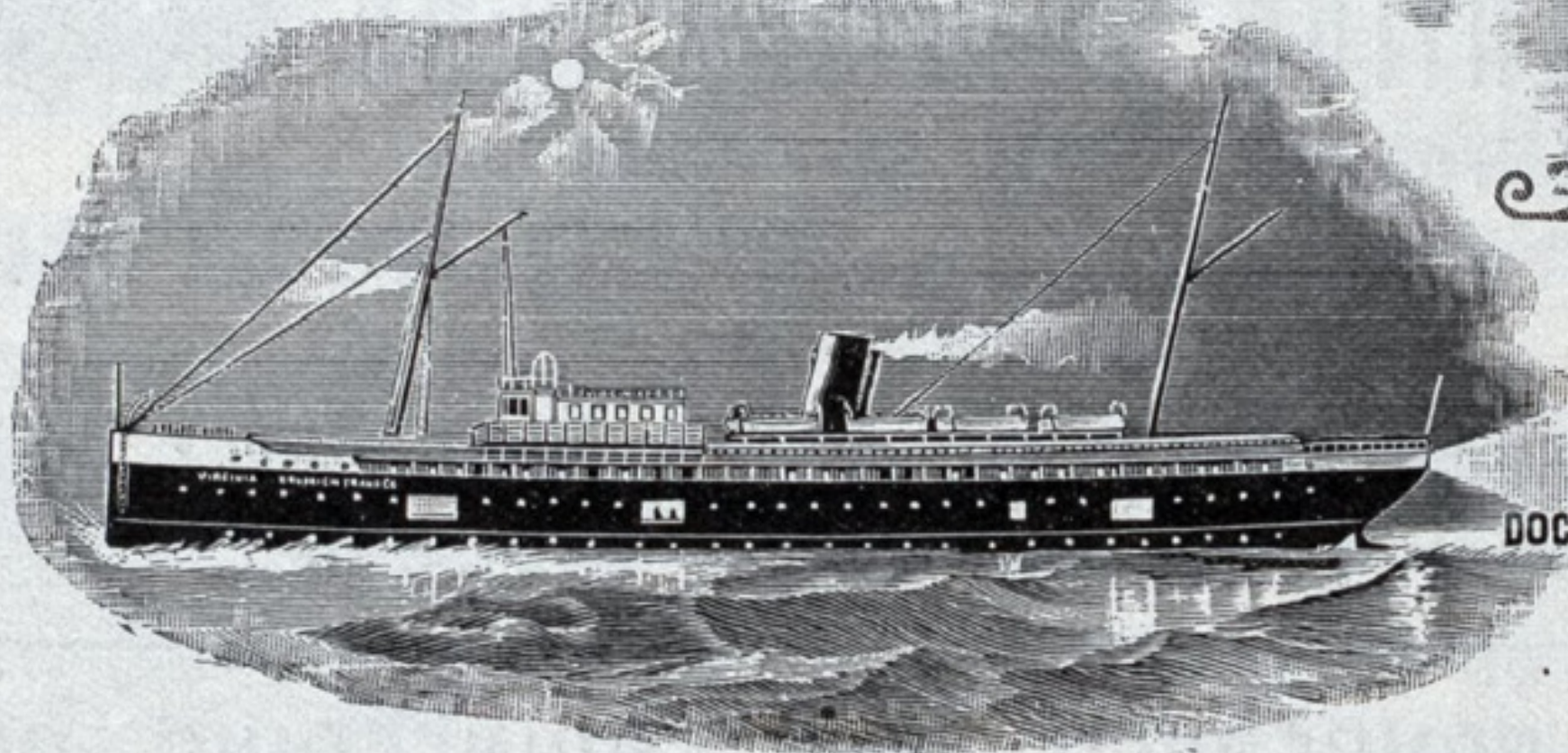
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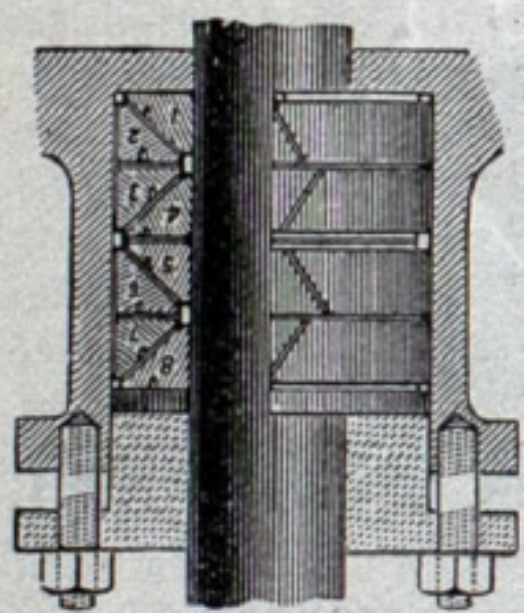
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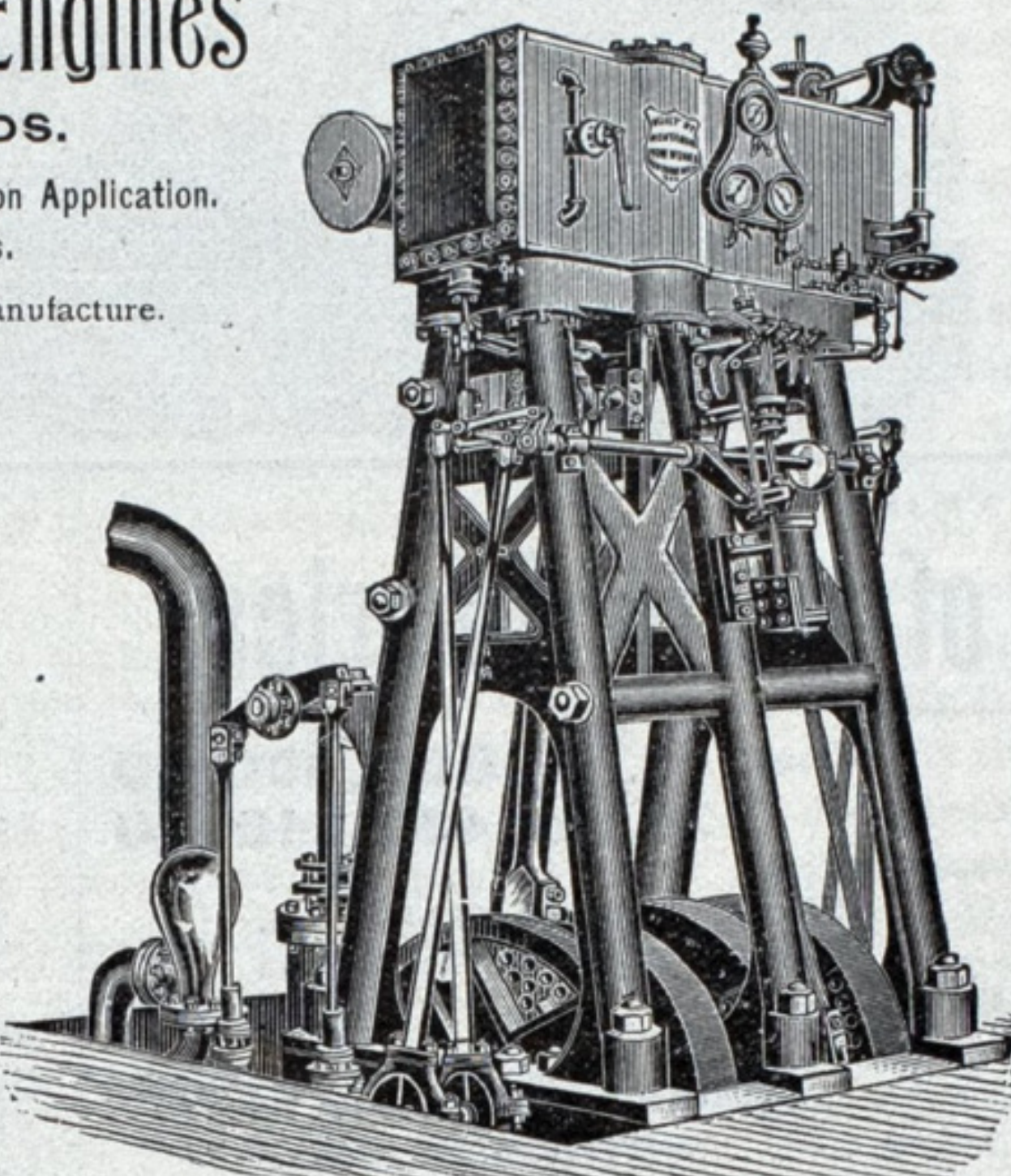
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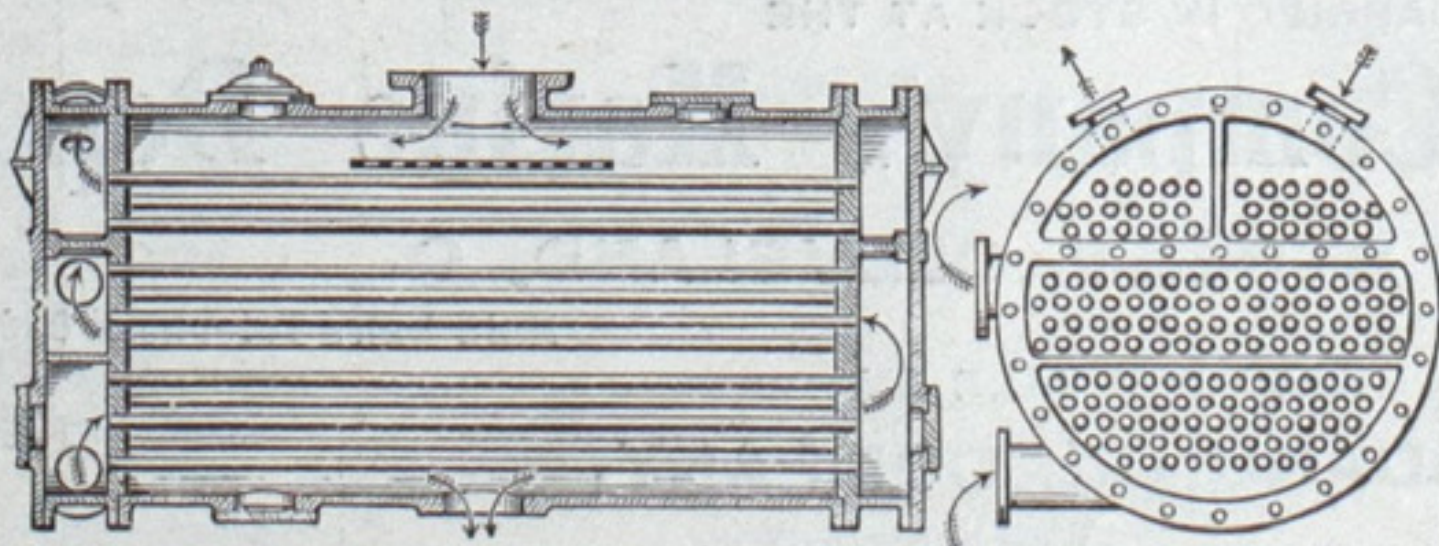
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U. S. ENGINEER OFFICE, 34 West Congress street, Detroit, Mich., August 6, 1894. Sealed proposals for Operating Machinery for the 800-ft. Lock, St. Marys Falls Canal, will be received here until 2 p. m., September 5, 1894, and then publicly opened. All information furnished on application. O. M. POE, Col. Corps of Engineers. 32-55

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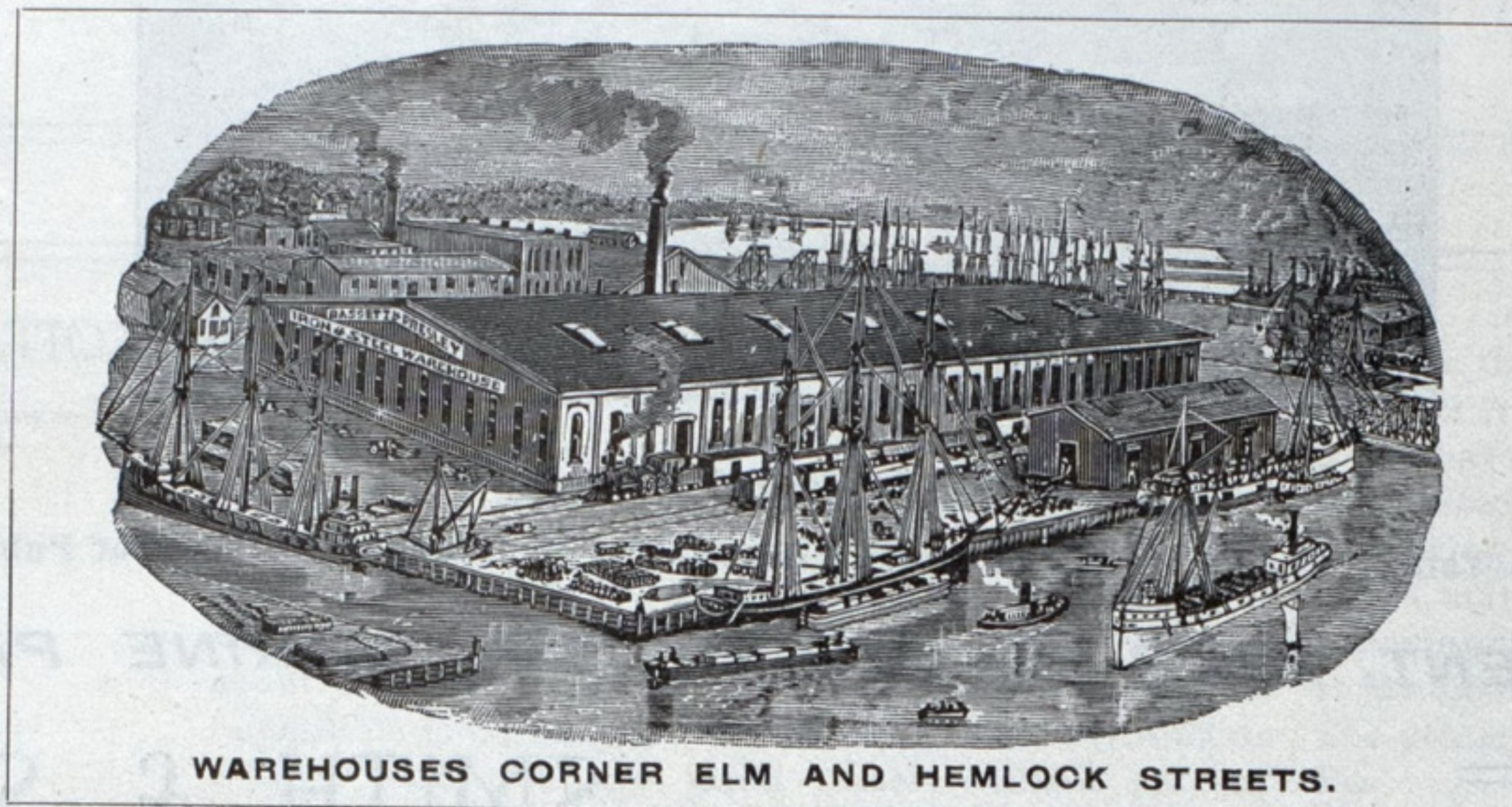
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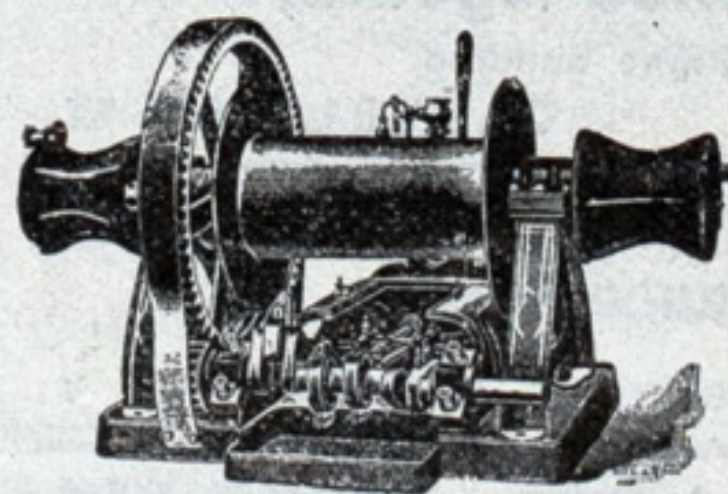
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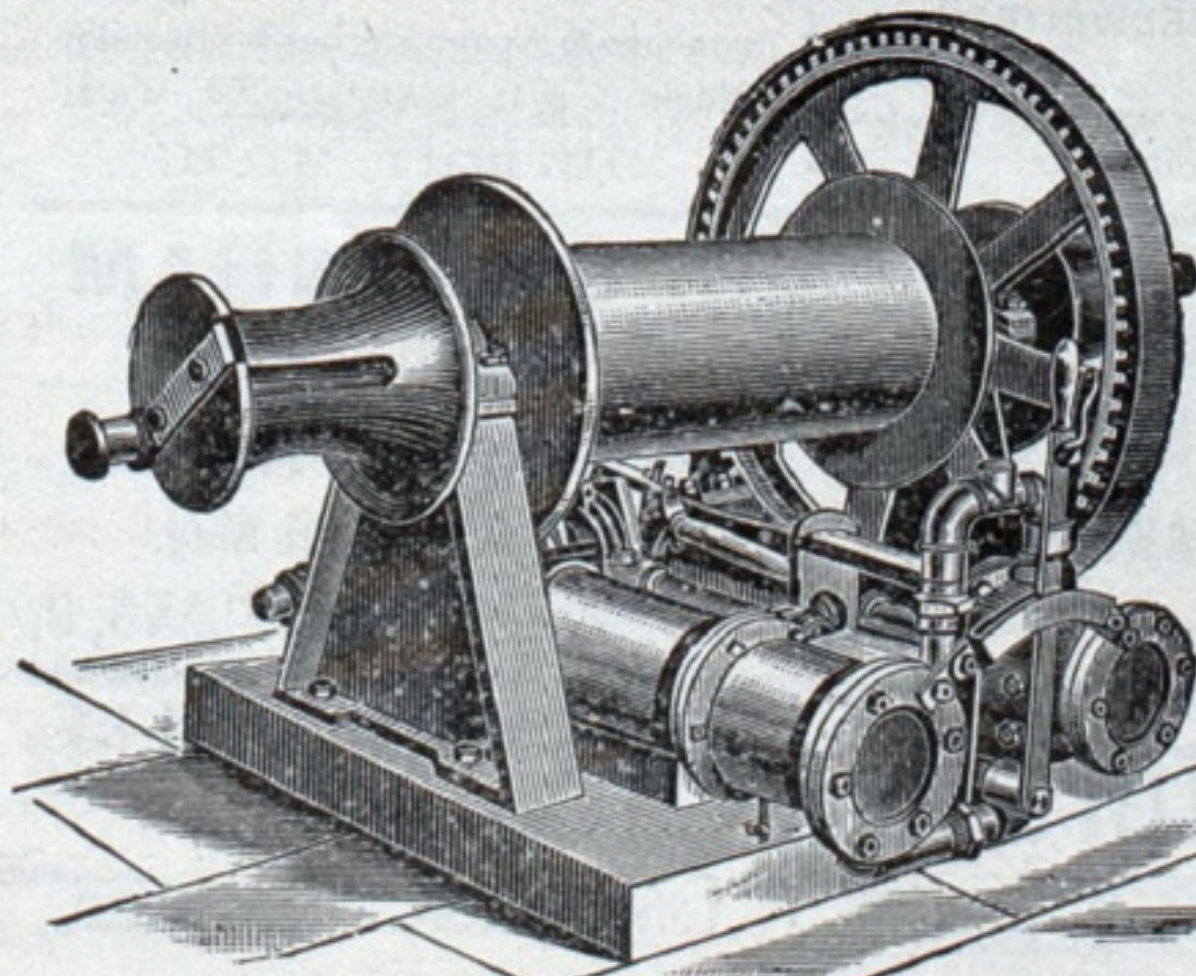
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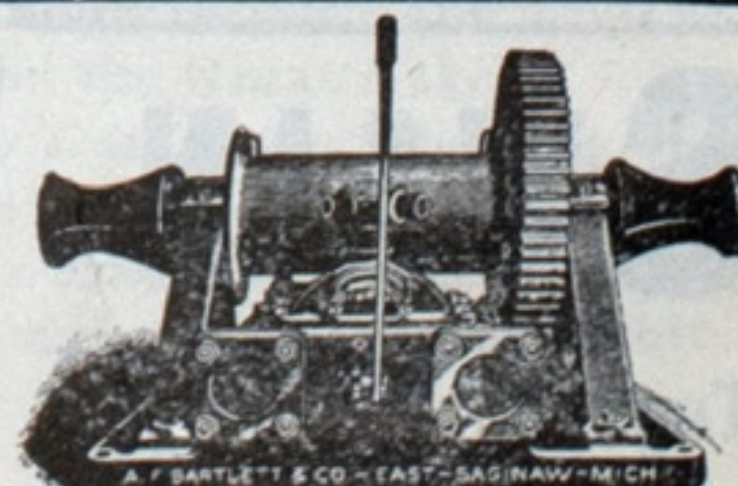


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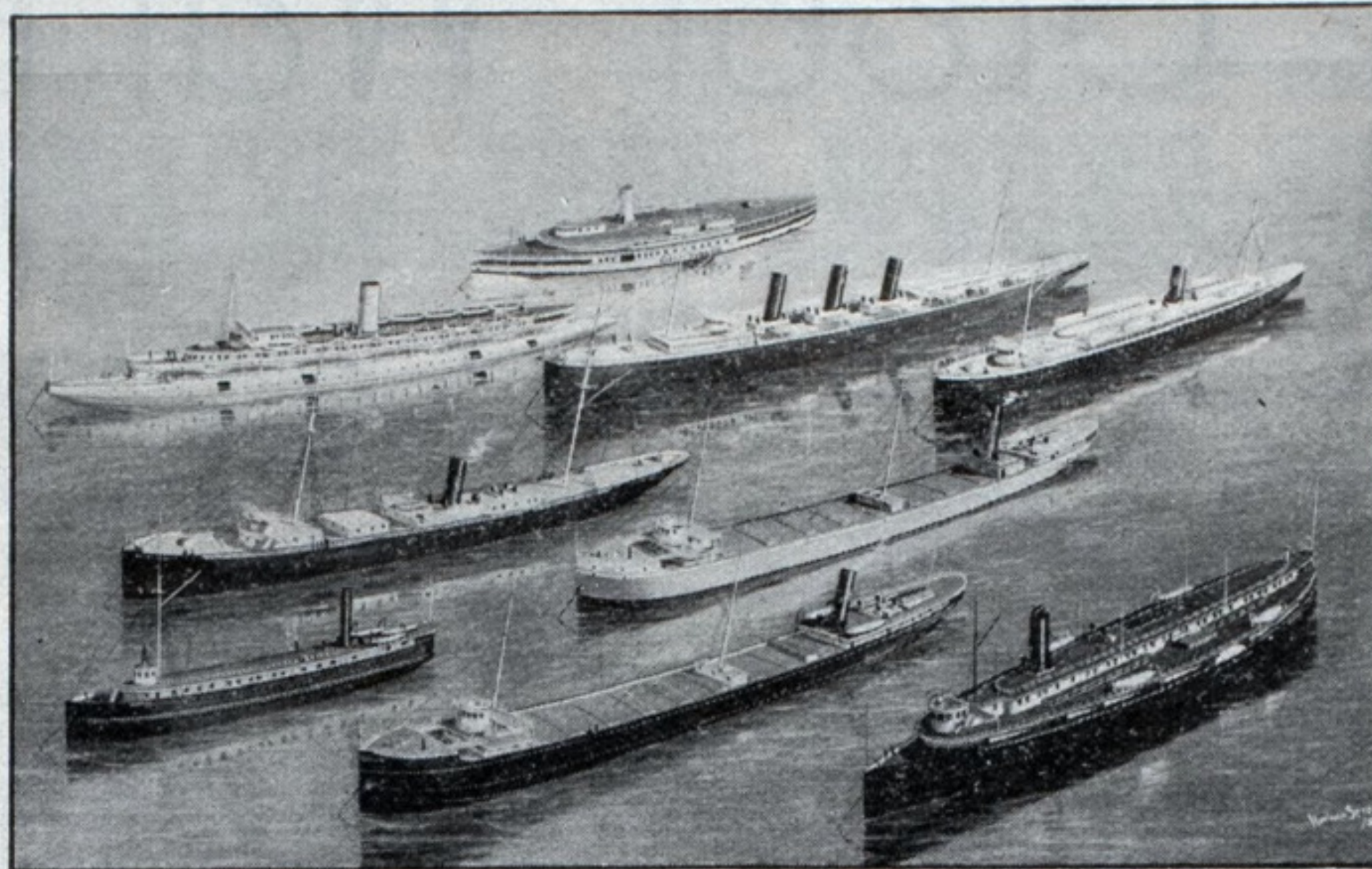
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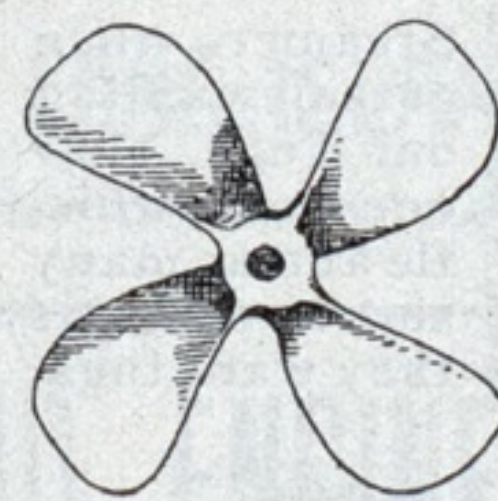
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Length of

Keel Blocks

340 ft.

Width of

Gate

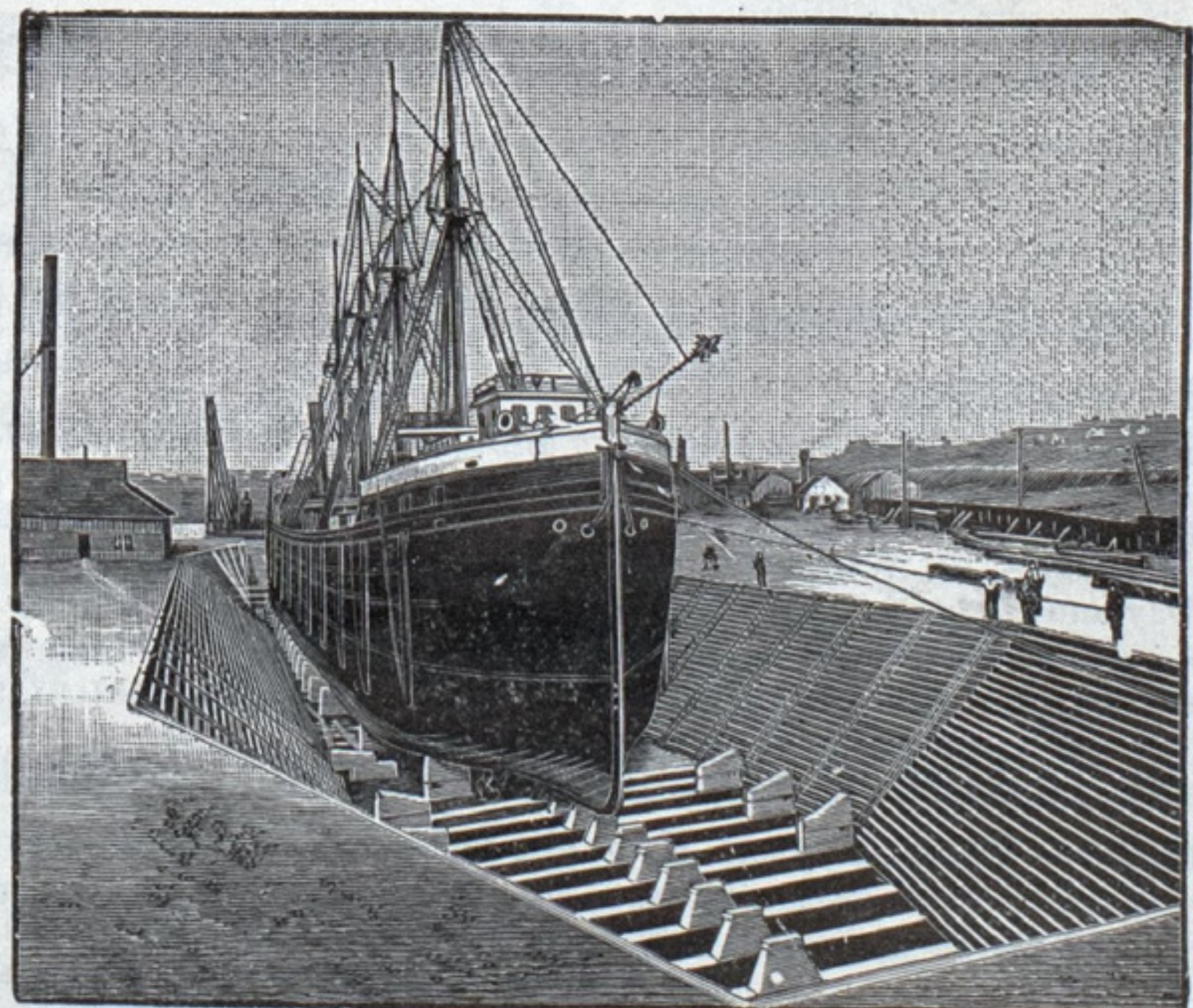
50 ft.

Depth of

Water on

Keel Blocks

16 ft.



NEW DOCK

Length of

Keel Blocks

300 ft.

Width of

Gate

52 ft.

Depth of

Water on

Keel Blocks

14 ft.

GENERAL REPAIR WORK PROMPTLY ATTENDED TO.

Being equipped with Lucigen Lights we can do work at night as well as day.

TELEPHONE 1635.

Foot of Weddell St., CLEVELAND, O.

SWAIN WRECKING CO.,

Tugs { FAVORITE AND
SAGINAW.

Telegraph { PARKER & MILLEN, Detroit, Mich.
Capt. M. SWAIN, Cheboygan, Mich.

CHEAP!

An article that requires a small outlay of money may be very expensive, while a large amount well placed might be economical.

Marine Record advertising has proven to be most economical.